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Original Articles

LABORATORY DIAGNOSIS OF VARIOLA.*

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The diagnosis of variola often presents difficulties, even to an expert. Patients, therefore, often have to be kept under observation for several days at considerable inconvenience, expense and danger to a municipality before they are finally released or sent to a smallpox hospital. This keeping of suspected patients under observation disturbs the peace of mind, not only of the patient, but of the physician on whom rests the responsibility of possibly sending a man who is not infected with variola to a smallpox hospital, or, on the contrary, of turning loose on the community a source of infection in an atypical case of smallpox. Most frequently these "observation" cases are those in which the evidence is just not quite enough to make the physician positive, and the patient has to furnish further evidence by the development of his disease.

It is desired in this article to suggest an aid to diagnosis that will furnish this added evidence at once and reduce the time of observation in these doubtful cases to a few hours instead of causing a delay of from one to several days. It will divide the responsibility of diagnosis between two men, just as a diagnosis of a malignant new growth is shared between the surgeon who operates and the pathologist who examines the tissue. The method advised is simply an application of laboratory diagnosis to variola. Why such a method has not been put into general use before, may be due to the facts that sufficient stress has not been laid on the specificity of the smallpox lesion, and that no good rapid method of diagnosis was at hand for examining such small portions of tissue, as by their removal, would cause no inconvenience to the patient.

I was enabled to obtain material for this study through the permission of Dr. John H. Simon, Health Commissioner of St. Louis, and by the kind aid of Dr. H. J. Scherck, chief dispensary physician, and of Dr. M. J. Dwyer, superintendent of the Quarantine Hospital, to all of whom I wish to express my sincere thanks.

Snipping of the skin, in all instances, was done only with the patient's permission, and in no case was there any subsequent complaint or untoward effects following such removal. The snipping of a piece of skin is less painful to the patient than pricking the skin, as is done in ordinary blood examinations. The bits of skin taken vary in size from 2 mm. to 5 mm. in diameter, i. e., a single papule, vesicle or pustule is taken, as the case may be.

For this study I was enabled to obtain skin in all stages of the disease. My earliest specimen was from a negro who developed variola while in the wards of the Missouri Pacific Hospital; the skin being taken a few hours after the appearance of the eruption. Most frequently the skin was taken the first, second or third day of the eruption. Skin was also taken at autopsy in the later stages of the disease.

TECHNIC.

While there are admirable rapid methods of diagnosis for ordinary surgical material, for example, Wright's[1] method for frozen sections, they present certain difficulties in this work. This is due to the small piece of tissue and to the trouble of mounting it. Methods more or less rapid also exist for celloidin and paraffin work, for example, that of Stein,[2] which, while they offer fair results, demand extensive detail and entail the chance of losing the piece of skin during the frequent changes of fluid to which it must be subjected.

Quite recently, however, a rapid method of paraffin imbedding has been described by Henke and Zeller,[3] which makes this work with very small pieces of tissue practical. The method is not only rapid, but is simple in the extreme, and gives results that can not be obtained with unimbedded tissue, as even the smallest snippings can be cut exactly where desired. A greater variety of stains can be used after this fixation than can be used after formol fixation. For instance, the eosin-methylene blue stain advised by Mallory,[4] which does not give good results after formol, works perfectly after acetone fixation. The method is as follows: The lesion selected (papule, vesicle or pustule) is spread out on a piece of filter paper to avoid curling and dropped immediately into pure acetone. The amount of acetone should be about twenty-five times the bulk of tissue. The tissue is left in the acetone from forty-five minutes to an hour and a half, and is then transferred directly into paraffin at 56° C. The paraffin at this temperature removes the acetone so that these two steps are all that are necessary. From one to two hours is sufficient time for the tissue to remain in the paraffin. The subsequent treatment is the same as with any paraffin material. The tissue is blocked and cut and the sections blotted to the slide. Xylol, absolute alcohol, thin celloidin, 95 per cent. alcohol and water are successively applied by the dropping bottle, and the sections are ready for the stain. It is

* From the Pathological Laboratory of the St. Louis University.

1. Mallory and Wright: Pathological Technic, p. 263.
2. Stein: Ueber Schnellhärtung u. Schnelleinbettung, Deutsche med. Wochft., vol. xxix, No. 44.
3. Henke and Zeller: Aceton-Paraffin Schnelleinbettung, Cent. für Pathologie, vol. xvi, No. 1.
4. Mallory: Scarlet Fever; Protozoon-like Bodies Found in Four Cases, Jour. of Med. Research, vol. x, No. 4.

important to use care in orientation of the sections. The lesions are mounted on edge. I find it most satisfactory to cut the whole piece serially, and then to select sections from both the center and edge of the lesion.

Staining may be done by any of the usual methods. Simple staining with a fairly dilute methylene blue often suffices for diagnosis. Hematoxylin and eosin are perhaps the most satisfactory stains for routine procedure. In doubtful cases, or when especial study of the section is desired the eosin-methylene blue stain previously referred to is undoubtedly the best. It offers, however, the disadvantage of requiring more time than the other methods.

This process, then, involves but four steps, and the result is a thin uniform paraffin section showing the exact part of the lesion desired and taking perfectly a variety of differential stains. A fair estimate of the time required for such sections is three hours from the time the skin is taken from the patient.

SPECIFICITY OF THE SKIN LESION.

Laboratory diagnosis of variola may be discussed under two heads: First, the specific histology of the lesion,

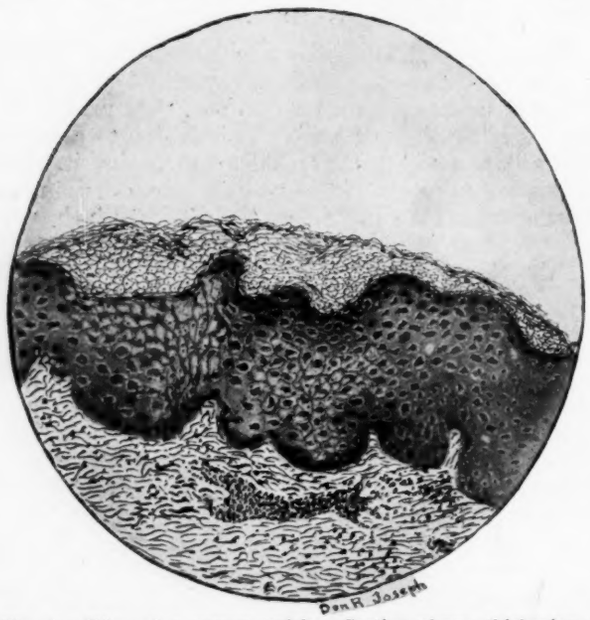

Fig. 1.—Edge of a young vesicle. Section shows thickening of the epithelium due to swelling of the cells in the mesial zone, which is represented by lighter staining. The earliest stage of vesicle formation is seen at this point. Numerous cytoplasmic bodies can be found in and about the light staining area. The blood vessel in the corium shows proliferation of endothelium. Figures 1 and 2 were sketched from Zeiss AA. Oc. 3.; Figure 3 from Zeiss 1/12, oil immersion, Oc. 3.

which should present less difficulty to the pathologist than do many sections of carcinoma and sarcoma which he is called daily to decide on. Second, the presence in the early stages of certain specific bodies best described by Councilman, Brinckerhoff, and McGrath,[5] and later by Howard and Perkins,[6] and regarded by these observers as parasites and the cause of the disease.

It is unnecessary to go into detail regarding the specific histology of the skin lesion in variola. The lesion has recently been described at length by Councilman, Brinckerhoff, and McGrath,[5] and by Ferguson[7] and the specificity always insisted on. Ewing[8] says: "It is hardly to be expected that histologic changes exactly similar to variola should occur in any other lesion. There is apparently no other condition in which rapidly necrosing squamous epithelial cells are bathed in fluids under pressure as in variola."

Briefly, the main histologic features may be summed up as follows:

1. The earliest change in the skin is a dilatation of the lymph spaces of the corium just below the deepest cells of the malpighian layer. Following this bathing of the epithelial cells with lymph, there is a change in the cells; the nuclei become swollen and there is a reticular degeneration of cytoplasm.

2. An increased depth of the layer of epithelium affected is noted, and a pale staining area in the mesial zone of prickle cells is seen. This represents the earliest stage of vesicle formation. The cells of the malpighian layer show degenerative changes.

3. The exudate which causes this swelling of cells and increased depth of epithelium in the early stages is always fluid. There are no polymorphonuclear leuco-

Fig. 2.—High-power drawing showing the number and distribution of the cytoplasmic bodies at the edge of an early vesicle.

cytes seen coming to the lesion at this stage, as in the beginning of practically all other forms of skin inflammation. There may be some proliferation of the endothelial cells from the vessels of the corium.

4. The vesicle is a development of the process described in 2. As the exudate increases the cells rupture. The cell borders form a network by coalescence. Still further exudation causes a rupture of the coalescent cell borders. The result is a cavity filled with fluid, in which are irregular cell strings, bounded above by the horny layer, and below by the corium or by an intact layer of epithelium.

5. The cavity gradually increases in size and is invaded by cells; polymorphonuclear leucocytes and lymphocytes. The cells in the cavity quickly break down. The lesion is now usually termed a pustule.

THE SMALLPOX BODIES.

Leaving aside the nature and the more complicated forms of the structures, certain bodies may always be

5. Councilman, Brinckerhoff and McGrath: The Pathologic Anatomy and Histology of Variola, Jour. of Med. Research, vol. xi, No. 1.

6. Howard and Perkins: A Study of the Etiology of Variola, Jour. of Med. Research, vol. xii, No. 3.

7. Ferguson: The Histology of the Skin in Variola, Jour. of Pathology and Bacteriology, vol. x, No. 1.

8. Ewing: Comparative Histology of Vaccinia and Variola, Jour. of Med. Research, vol. xii, No. 4.

seen in skin lesions of variola, properly prepared, in the early stage of the disease:

1. Cytoplasmic Bodies.—These may be small structureless bodies, one to four microns in diameter; homogeneous ameba-like bodies lying in vacuoles; larger reticular bodies eight to ten microns in diameter; small dot-like bodies about one micron in diameter. In general, these bodies are best seen in the edge of a young vesicle. They occur in the cytoplasm of normal cells, degenerated cells and between the cells. They may also be seen in the corium before the formation of the vesicle. The presence of these bodies in the skin before there is any definite anatomic lesion is an important point in diagnosis.

2. Intranuclear Bodies.—I have not been able to find intranuclear bodies in the earliest cases. It is suggested by Councilman, Brinckerhoff, and McGrath,[5] that these bodies represent a further stage in the development of the cytoplasmic bodies. As the presence of these bodies is not necessary to a diagnosis they will not be discussed here. They are best found from the time of disappearance of the cytoplasmic forms until repair has begun. For complete descriptions of these bodies the reader is referred to the authors previously mentioned and to Calkins[9] and Tyzzer.[10]

All cases are not typical and variations of type must be considered in the laboratory just as in the clinic. Departure from the typical may consist in the incomplete development of the lesion (abortive type), or in the diffuse hemorrhage that takes place in some cases before the appearance of any lesion. I have not had the opportunity to study typical hemorrhagic cases, but Councilman[5] states that in cases where purpura preceded the eruption "there was no doubt about the character of the process. The skin showed the earliest stage of true lesions. In all cases there were parasitic inclusions." While laboratory diagnosis of variola may be sometimes quite as difficult as is the microscopic determination of the malignancy of certain tumors, I believe, however, that with the microscope fewer mistakes are liable to be made by a microscopist of reasonable skill in smallpox diagnosis than in tumor diagnosis.

CONCLUSION.

In conclusion, then, by means of acetone fixation, paraffin imbedding and hematoxylin-eosin staining, we can make a laboratory diagnosis of variola from a small skin snipping in an average time of three hours, based on a specific histologic lesion and on the presence of certain bodies in or adjacent to the lesion.

9. Calkins: The Life of Cytoryctes Variolæ, Guarnieri, Jour. of Med. Research, vol. xi, No. 1.

10. Tyzzer: Etiology and Pathology of Vaccinia, Jour. of Med. Research, vol. xi, No. 1.

LARGE CARCINOMATOUS TUMOR OF THE LIVER.

REMOVAL SEVENTEEN MONTHS AFTER NEPHRECTOMY FOR CARCINOMA OF THE LEFT KIDNEY. TEMPORARY RECOVERY.

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Although Brunn in 1870 removed a small hepatic tumor, the surgery of the liver does not seem to have attracted much attention until Lin, in 1886, successfully performed a partial resection. Since that date, however, more than 100 resections of portions of the liver have been reported. Among the exhaustive treatises on the subject those of Terrier and Auvray,[1] in France, and of Langenbuch,[2] in Germany, deserve especial mention. In America the name of W. W. Keen[3] of Philadelphia is intimately associated with the development of the technic of liver surgery. He has not only reported three cases of resection, in all of which recovered took place, but has also published an exhaustive review of the previous literature. Nor should it be forgotten that a Baltimore surgeon, Dr. Louis McLane

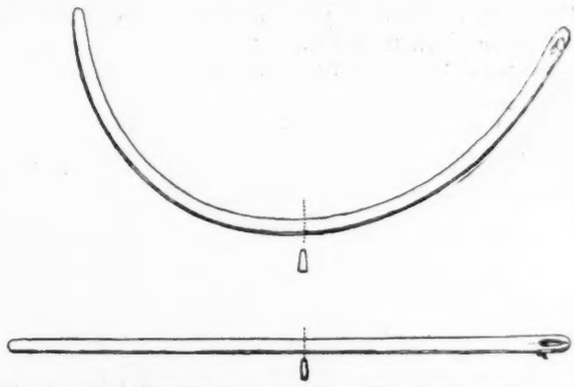

Fig. 1.—Kousnietzoff's blunt needle. This large curved needle has a rounded point. Its shape on cross section is shown in the small sketch below. The straight needle is preferable for mattress sutures.

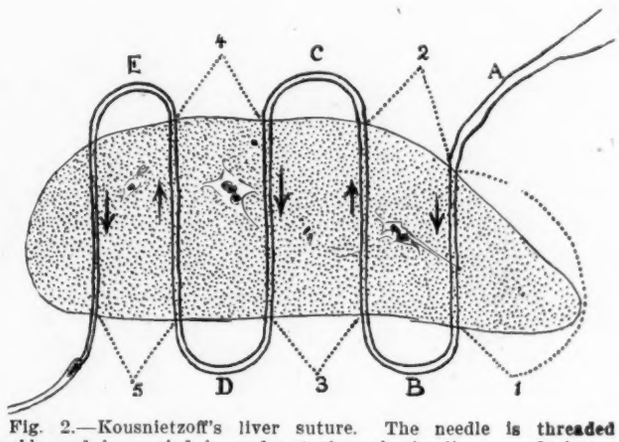

Fig. 2.—Kousnietzoff's liver suture. The needle is threaded double and is carried in and out through the liver, producing a continuous mattress suture, which is cut up into single mattress sutures before tying.

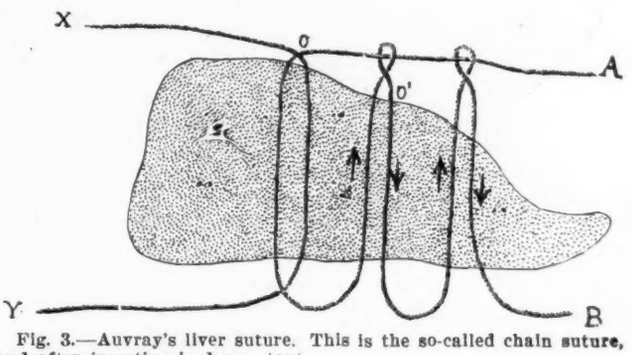

Fig. 3.—Auvray's liver suture. This is the so-called chain suture, and after insertion is drawn taut.

1. Terrier and Auvray: Les Tumeurs du Foie, Rev. de Chir., 1898, vol. xviii, p. 403.

2. Langenbuch: Chirurgie der Leber und Gallenblase, Deutsche Chirurgie, Stuttgart, 1897.

3. Keen, W. W.: Resection of the Liver, Boston Med. and Surg. Jour., vol. cxxvi, p. 405, 1892; Pennsylvania Med. Jour., 1897; report of a case of resection of the liver for removal of a neoplasm, with a table of 76 cases on resection of the liver for hepatic tumors. Ann. of Surg., September, 1899.

Tiffany,[4] was one of the first Americans successfully to remove a tumor of the liver.

The Nature of Hepatic Tumors.—Few operators have reported more than one case, and as each has had his own idea of the proper nomenclature of tumors, there is naturally much diversity of description. With the more thorough study of the subject, the varieties will undoubtedly be materially diminished in number. The list of those given is as follows:

Constricted and prolapsed lobe of the liver.
Fibroma.
Syphiloma or gumma.
Tubercle (occasionally single, may reach 3 or 4 cm. in diameter).
Adenoma.
Lymphadenoma.
Cysts: (a) echinococcus cysts; (b) biliary cysts (large and lined by one layer of cylindrical epithelium).

Fig. 4.—Adenocarcinoma of the kidney (natural size). Gynecologic Pathologic No. 6364. This is a longitudinal section of the hardened kidney. There is a well-defined outer capsule which consists almost entirely of connective tissue. Passing off into the growth from the capsule are trabeculæ (*a*) which divide it into large and small alveoli. The growth presents a decidedly mottled appearance. At *b* it is finely granular. In numerous places it has undergone necrosis and disintegration as seen at *c*. The ureter is little, if at all, enlarged.

Angioma: (a) congenital; (b) acquired.
Lymphangioma cavernosum.
Cancer: (a) primary; (b) secondary.
Sarcoma: (a) primary; (b) secondary.
Endothelioma.
Aneurism of the hepatic arteries.

Echinococcus cysts, cancers and syphilomata are the most common of hepatic tumors. The growths vary greatly in size, some being not more than 2 or 3 cm. in diameter, while others, as in Pfannenstiel's case, may be so large as to render the abdomen larger in its dimensions than that of a pregnant woman at term.

INCIDENCE AND SYMPTOMS OF HEPATIC TUMORS.

Tumors of this character may be found in the young or in the old. They are, however, most common between the twentieth and fiftieth years. As has been pointed out by Keen, hepatic growths are much commoner in women than in men. In 68 cases analyzed by him, 13 of the patients were males and 55 females. He thinks that the relative immunity in men is probably due to the looseness of the clothing worn. In the additional cases which I have collected, 4 of the patients were men and 12 were women.

The symptoms of hepatic tumors are in no way characteristic. Practically, they are those belonging to any growth developing in the right upper abdominal quadrant. When the growth is primary and situated near the lower edge of the liver in a thin patient, it is sometimes palpable, but if the individual be stout the growth can readily be overlooked.

DIAGNOSIS.

Hepatic tumors are rarely correctly diagnosed until the abdomen is opened. In the cases reported the growths have been mistaken for tumors of the kidney, ovarian cysts, uterine myomata, mesenteric and pancreatic tumors, tumors of the colon, aneurisms of the aorta, growths in the gall bladder and stomach, and abscess of the liver. This is equivalent to saying that in a series of cases they have at one time or another been confused with almost every tumor that may be present in the abdomen. Such a tumor is usually first noticed on the right side, in the region of the lower edge of the

4. Tiffany, Louis McLane: Maryland Med. Jour., 1890, vol. xxxiii, p. 531.

liver. In the rare instances in which the movement of the diaphragm is transmitted to the tumor, we possess a diagnostic sign of much value. Occasionally, percussion or palpation, or both, will enable us to detect a definite connection between the tumor and the liver.

Even after the abdomen has been opened and the tumor exposed, one is often still in doubt as to the exact nature of the growth. If the patient has given a definite history of syphilis, it may be assumed, with a relative degree of certainty, that a gumma is present; on the other hand, if a carcinoma of the stomach be present, the surgeon will be justified in concluding that the hepatic growth is a secondary cancerous nodule.

As a matter of fact, it is rarely possible to be able to make more than a tentative diagnosis, until the growth has been removed. In our case the left kidney had been removed nearly eighteen months previously for carcinoma. The symptoms accompanying the hepatic tumor were quite applicable to a case of liver abscess, and after the abdomen had been opened the general picture suggested an inflammatory process of the liver. Furthermore, on careful examination of the left renal region no evidence of a return of the former growth could be detected. The internal organs were in good condition, and in the liver no other nodules could be found. The absence of any inflammatory reaction at the junction of the tumor with the normal liver substance was the only sign that pointed against the presence of an abscess. In short, it was found to be impossible to determine with any degree of certainty whether the tumor was an abscess or a metastatic carcinomatous nodule. As the remaining kidney was already impaired, it was thought that, even should the swelling prove to be an abscess, an attempt at drainage would be associated with considerable danger of an acute peritonitis, and that even if this complication were avoided, the continual discharge from the abscess wall would militate against the patient's recovery. On the other hand, in

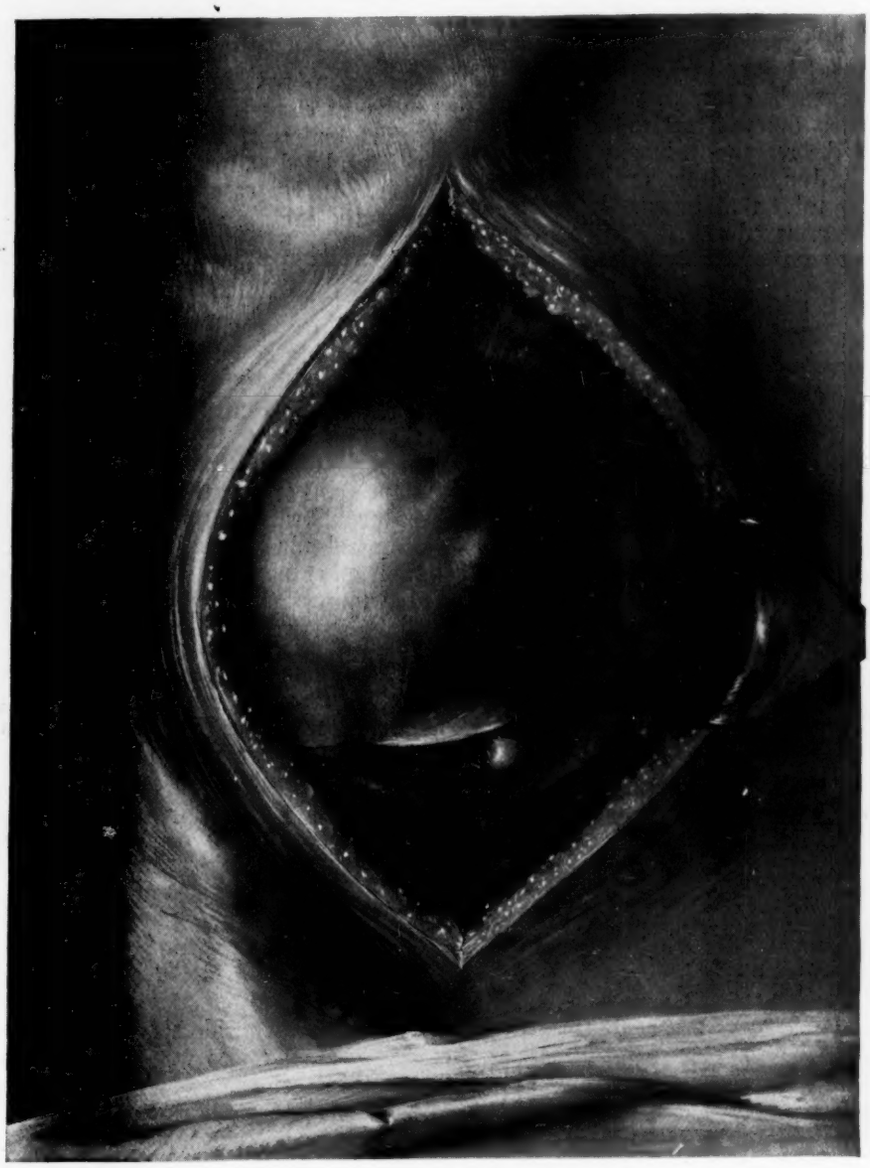

Fig. 5.—Secondary carcinoma of the liver (one-half natural size). The liver is markedly displaced downward. Occupying the greater part of the right upper quadrant of the abdomen is a hepatic growth. Downward this almost eaches the anterior superior spine; medianward it passes nearly to the umbilicus and laterally makes the abdominal wall prominent. The growth seems tense, is slightly lobulated and, although sharply outlined, gradually blends with the liver substance. The edge of the liver forms a prominent ridge along the lower margin of the growth and the gall bladder is seen lying against the under and inner surface of the tumor. It is readily seen that when the cystic duct was severed the greater part of this liver could be rolled out of the abdomen. For a cross section of the hepatic growth see Figure 7.

ease the growth were malignant, it was evident that the only hope of success lay in its complete removal. Even after the tumor had been sent to the laboratory a provisional diagnosis of abscess of the liver was made after a thorough macroscopic examination, and the histologic revelation of adenocarcinoma came as a great surprise.

EXPERIMENTAL RESECTION OF PORTIONS OF THE LIVER.

The exhaustive articles of Langenbuch[2] and of Terrier and Auvray[1] give in detail the interesting animal experiments of Glück, Tizzoni, Griffini, Podvisotzky, Ponfick, Tillmanns and Ceccherelli. Ponfick[5] found that it was possible to remove three-fourths of a dog's liver without permanent injury to the animal, and that in thirty days the organ had regained its normal size. Regeneration was partly due to hypertrophy, but mainly to multiplication of the remaining liver cells. No new lobules were found. Judging from analogy, the surgeon would naturally infer that in man large portions of the liver might be removed and the patient recover;

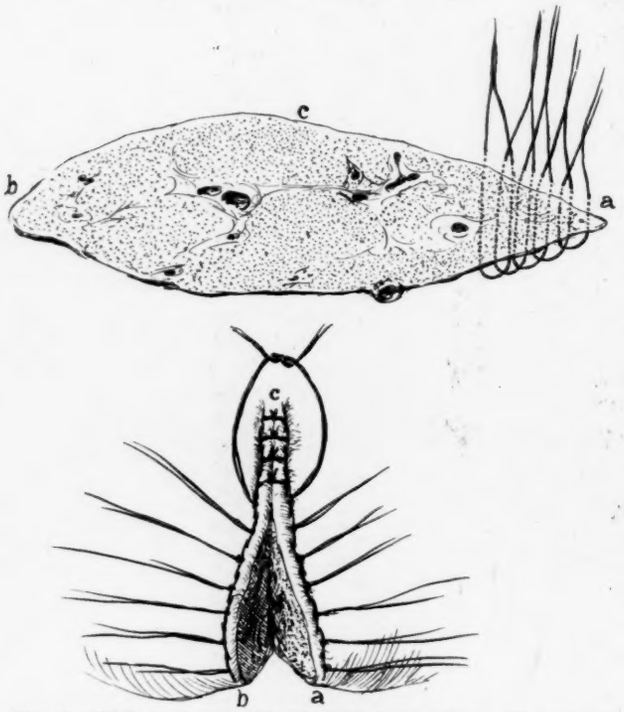

Fig. 6.—Method of controlling hepatic hemorrhage. The cut surface represented in the upper sketch measures 16x6 cm. Mattress sutures were applied about 1 cm. from the line of section. Each overlapped the other so that every particle of liver substance was controlled. Pagenstecker sutures were used, reinforced by catgut, where necessary. The large vessels were readily picked up with forceps and tied freehand. After all the sutures had been tied and lifted up, *a* and *b* tended to come together. Beginning at *c*, corresponding opposite sutures were drawn across and tied to each other. The approximation was good, but not quite so accurate as one would infer from the sketch.

and the reported cases prove that the suggestion is well founded, as in some instances large areas have been resected and the patients have regained perfect health.

INDICATIONS FOR RESECTION OF A PORTION OF THE LIVER.

It is important to determine (1) whether the growth be malignant or not; and (2) if malignant, whether it is primary or secondary. In the case of metastatic neoplasms, as a rule, operation is contraindicated, inasmuch as they are usually multiple. Primary carcinoma or sarcoma of the liver is rare. Should the hepatic growth be primary, the glands along the vessels and at the base of the liver should be carefully palpated to ascertain whether they have become involved. This point was first insisted on by Tuffier.[6] In cases of lymphadenoma, with secondary nodules in the liver, operation is not advisable. In all cases of liver growths the following points should be carefully considered: (*a*) Whether the growths be single or multiple; (*b*) situation; (*c*) size; (*d*) whether they are pedunculated or not.

If the growths are multiple and scattered over a wide area, removal is difficult or impossible. On the other hand, provided that they are near the lower edge of the organ, resection is feasible. In fact, in the majority of cases the situation is all important.

The size is of little importance when the growth is pedunculated and situated near the lower margin of the liver. In the case of a large tumor, however, located near the middle of the organ, removal is exceedingly difficult or impossible. If it is located near the edge, amputation is not difficult, but if it is near the middle of the lobe, a very large portion of the liver must be resected, or a cavity is left which may be the source of an alarming or even uncontrollable hemorrhage. When the growth lies near the portal vein or hepatic arteries, operation is contraindicated, since large branches of these vessels are liable to be injured with a resulting necrosis of correspondingly large areas of liver substance and the death of the patient. If the growth be pedunculated, its removal is easier, inasmuch as the liver substance forming the pedicle is much tougher than other portions of the organ. This toughening is due to partial atrophy of liver cells.

METHOD OF PROCEDURE.

After having decided that the growth is to be removed, free exposure of the liver is absolutely necessary. The abdominal incision is lengthened, and may be curved to the right or left as desired. If the liver is freely movable, the greater part can be brought out of the abdomen; but if the organ is fixed, it will be necessary to loosen it. This is accomplished by severing the suspensory and round ligaments and, if necessary, to a limited extent the ligamentous attachments of the diaphragm. Care must be exercised to avoid injury to the pleural or pericardial cavity, and in case of such an accident the opening should be immediately closed with catgut sutures. The mobility of the liver may also be considerably increased by cutting through the cystic duct, as was done in this case, after which two-thirds of the liver was easily brought outside the abdomen. If the liberation of the liver obtained in this manner is still insufficient, portions of the lower ribs may be cut through and turned back. This free exposure of the liver will be found of the greatest comfort to the operator during the subsequent steps of the operation; for not only is he able to control the blood supply much more thoroughly, but he is also working outside the body instead of deep down in the cavity.

TEMPORARY MECHANICAL CONSTRICTION.

Prior to cutting into the liver, a constricting band, if possible, should be thrown around the organ, at least an inch or more from the line of section. Many surgeons have employed strong rubber tubing; or a long piece of gauze twisted in the form of a rope, as used

5. Ponfick: Lancet, 1890, vol. I, 881.

6. Tuffier: Bull. et mém. de la Soc. de Chir. de Paris, 1897, n. s., xxiii, p. 70.

in this case, will answer equally well. Even after this has been drawn tight and clamped with forceps, it must be carefully watched throughout the entire operation, as it is liable to slip from the slanting liver substance and thus fail to prevent a free hemorrhage.

THE INCISION INTO THE LIVER SUBSTANCE.

When we remember the great number of blood vessels that are present one can readily understand the dangers connected with the removal of a large segment of liver substance. In Langenbuch's most graphic account of his experiences we are told that during an operation the hemorrhage was so sudden and severe that the abdomen was in an instant full to overflowing with blood and the field of operation was obliterated. Any one who has read his account will certainly never fail to have plenty of assistants, and every conceivable requisite is at hand to meet any similar emergency. Now-a-days, fortunately, the picture is not so disheartening, thanks to the improvements in technic introduced by Keen, Kousnietzoff[7] and Auvray. I shall not attempt to give in detail the various methods employed, but shall only sketch very briefly the procedures that have apparently yielded the best results.

The liver substance may be severed by: (1) The knife; (2) the cautery (at a dull red heat); (3) the blunt scissors or curette; (4) blunt dissection, peeling the tumor out with the thumb nail (Keen). Each method has its advantages and its drawbacks. The knife gives a clean-cut surface, but many vessels are opened and bleed freely. The cautery leaves a charred surface, and vessels that are temporarily controlled may bleed later. The operator hardly feels safe in trusting solely to small plugs of clotted blood to control the small and medium-sized vessels, when he knows that the escape of one of these may mean fatal hemorrhage. On the other hand, nothing checks capillary hemorrhage better than the cautery at a dull red heat. Blunt scissors, the curette and blunt dissection with the finger leave a much rougher base, but injure far fewer vessels.

THE CONTROL OF HEMORRHAGE.

Probably the safest plan is to control the bleeding before making any incision into the liver or to tie off different segments as they are severed. Langenbuch has pointed out that the liver substance often shows pathologic changes when tumors are present. Thus there may be a hyperemia associated with an increased friability of the organ rendering the application of sutures difficult. On the other hand, there may be an atrophy of the liver cells accompanied by an increase of connective tissue, which renders the tying of ligatures a relatively easy procedure.

Needles.—One of the chief sources of hemorrhage in liver operations has been from the needle holes; in fact, in some cases, the free oozing from these sources has been uncontrollable. Thanks to the ingenuity of

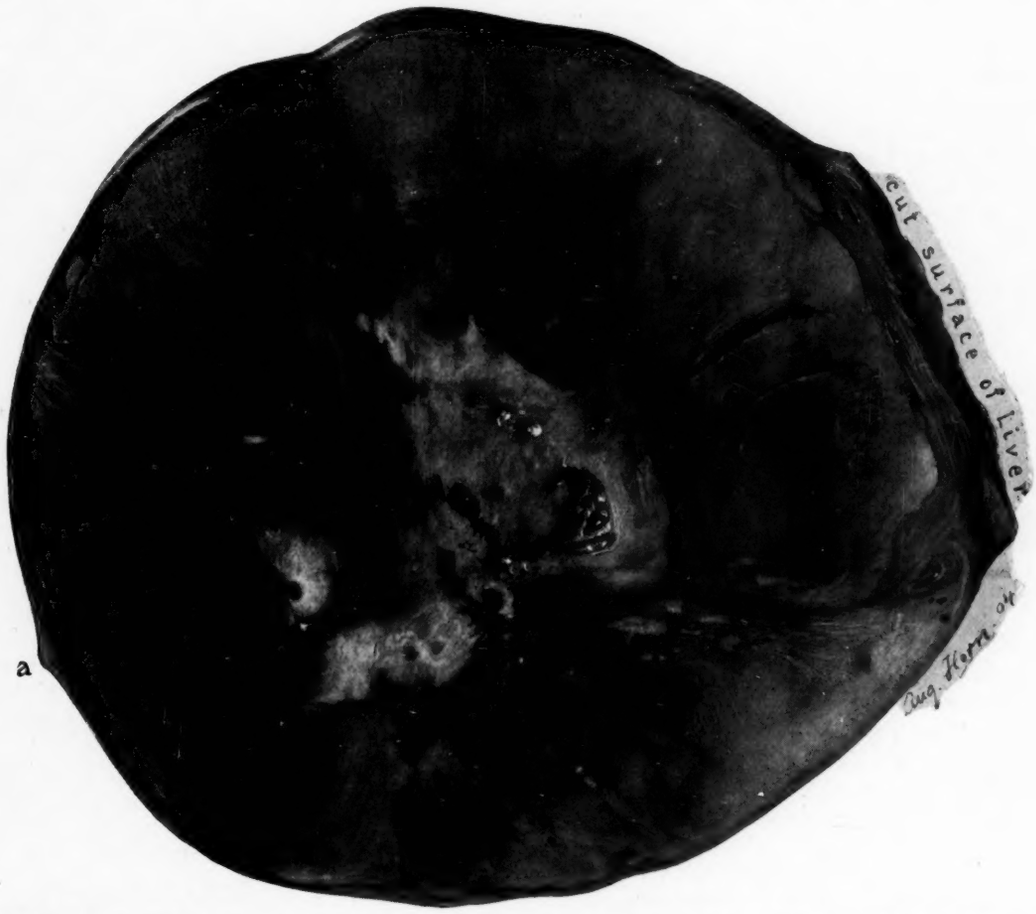

Fig. 7.—Secondary carcinoma of the liver (natural size). As the specimen was very soft it was impossible to cut it before hardening. Encircling the entire growth is a definite capsule varying from 1 to 3 mm. in thickness. *a* is the sharp edge of liver substance that passed over the lower surface of the growth. This growth bears much resemblance to the parent kidney tumor (Fig. 4), and in its central portion has undergone complete necrosis. The cut surface of the liver indicates the line of amputation.

7. Kousnietzoff (Kuznetsoff): Laitop. russk. Chir., S. Peterb., 1901, 6, 888-931. Mikulicz wrote the preface to this article and mentioned the number of cases operated on by him.

Kousnietzoff, we now possess a needle that renders the application of sutures almost or entirely bloodless (Fig. 1). This needle may be straight or curved; it is flat on the sides, and rounded at both ends. It is gently and slowly forced through the liver substance, and, being blunt, pushes the blood vessels to one or the other side. This needle has yielded admirable results in dogs, and Mikulicz, who has employed it six times in the human liver, says of it, with some enthusiasm: "To my mind Kousnietzoff's needles represent the egg of Columbus in the technic of liver surgery."

Cautery.—Keen slowly and cautiously employed the cautery at a dull red heat, and took twenty minutes to cut off the desired segment. He was usually able to see the larger vessels before they were opened. These he tied, both proximally and distally, and then burned through them. If a large vessel was opened before being tied, he plugged the opening with his left index finger, while with the right hand he passed a ligature threaded on a curved needle carefully through the surrounding liver substance; the ligature was then tied slowly by an assistant. In this manner he was able to remove the growth with little difficulty. Keen insists on the use of dull red heat, and points out that, if the tissue is cut through too rapidly, a sufficient eschar is not formed to check the oozing. In some of his work he combined blunt dissection with the finger with the use of the cautery.

Sutures.—Kousnietzoff has devised a rather complicated continuous suture (Fig. 2), which practically resolves itself into a series of mattress sutures. Auvray has advised a continuous chain suture which he has found to work well (Fig. 3), its object being to distribute more equally the strain on the liver substance and so render it less liable to tear. The sutures of Kousnietzoff and Auvray would seem, from the illustrations, to be open to the objection that hemorrhage might occur from the spaces between adjoining sutures. In our case simple mattress sutures were introduced with the blunt needle (Fig. 6), each suture overlapping the other so that no area was left unprotected. After the application of three or four sutures about 1 cm. from the line of section, the liver was severed over a corresponding area, an assistant in the meantime holding the placed sutures taut. The tumor was grasped firmly in order to prevent oozing.[8]

The sutures were now slowly and snugly tied; others were then applied in a similar manner, and the entire liver growth was readily removed in about ten minutes. The mattress sutures were tied after the tissues had been cut, instead of before, because the liver was stretched near the tumor, and there was danger that after tension was relieved they would be too loose to thoroughly control the vessels. Five or six large vessels were encountered. These were readily picked up with forceps and tied.

Suture Material.—In many of the reported cases catgut was used exclusively. In this case fine Pagenstecker thread, reinforced with catgut, was employed. Catgut is, of course, the material generally preferred, but where there are such large vessels and so much tension, sutures of silk or linen thread are, on the whole, more reliable; although the silk will gradually work its way out.

Treatment of the Stump.—After controlling all bleeding, it remains to deal with the raw area. Where the cautery has been used, one can not expect to bring charred surfaces together and get union. Again, only in very exceptional cases would it be possible to remove a large tumor and have such a satisfactory folding as in this case. As a rule, the cut surface must be left as it is. Some surgeons advocate stitching the omentum over it. Others close the abdomen without drainage. From a careful review of the cases I gather the impression that it is better to drain. Where this is done, bile is often found escaping through the wound from the cut surface of the liver for several days, and if the abdomen has been closed without drainage, this must of necessity flow into the abdomen. Keen has laid stress on this point, but says that the danger from absorption "seems to be more theoretical than practical." In this case an iodoform drain was carried to the under surface of the liver and another to the upper surface along the line of the sutures. Pfannenstiel[9] has called attention to the possible danger of using iodoform gauze where large areas of raw liver substance are left, and prefers sterile non-medicated gauze for this purpose.

COMPLICATIONS THAT MAY ARISE DURING AN OPERATION.

The operation is sometimes beset with many difficulties. Where the tissue is very friable the sutures may cut through the liver substance. To overcome this difficulty Ceccherelli and Bianchi used decalcified bone plates over the upper and under surfaces and sutured through them. In some cases, after removal of a nodule from the center of the liver, when it was impossible to check bleeding by sutures, the cavity was packed with gauze, held firmly in place by sutures passed through the liver substance.

In other cases, where it was impossible to check oozing, a rubber ligature was firmly secured around the liver, slipping being prevented by means of two hat-pins passed through the organ at right angles to each other. The edge of the liver was then sewed to the peritoneum of the abdominal wound. In some of these cases the growth was cut away and the stump left to granulate up. In other instances the growth was left to slough away, the constricting band being tightened from time to time.

IMMEDIATE AFTER-RESULTS.

Hemorrhage is the most serious complication. It may take place after a few hours or at the end of a day or two. The employment of the suturing method of Kousnietzoff or Auvray or the overlapping mattress suture will undoubtedly render secondary bleeding far less frequent. Where hemorrhage occurs, however, the abdomen should be opened at once, for the patient is not always exsanguinated. If the bleeding points can not be controlled a rubber ligature should be applied and prevented from slipping by means of hat-pins. The stump can then be treated extraperitoneally, the edge of the liver being fastened to the peritoneum.

MORTALITY.

Terrier and Auvray collected 38 cases operated on for the following diseases: Sarcoma, 4; carcinoma (considered primary at the time of operation), 7; sec-

8. In bisecting the uterus there is always free hemorrhage, especially in the case of a large myomatous organ. Dr. Kelly has taught that strong traction on each half almost completely checks oozing. This principle was applied to the distal segment of the liver with very satisfactory results. It must be said, however, that the liver substance removed with the tumor, in this case, was relatively small.

9. Pfannenstiel: Med. Centr. Ztg., Berl., 1898, lxvii, 177-179.

CASES OF RESECTION OF PORTIONS OF THE LIVER REPORTED SINCE 1899.

Reporter and Reference.	Sex.	Age.	Duration, Nature and Size.	Method of Removal.	Treatment of Liver Stump.	Result.	Remarks.
Carl Beck: Chicago Med. Recorder, 1901, xxi, 383-386.	Male...	20	Followed kick 5 years before. "Angio-adenoma" the size of man's head occupied the entire left lobe.	Controlled by rubber catheter, held by two hat pins through stump. Half the tumor removed, half left to slough off.	Extra-peritoneal . . .	Recovery	Largely an angioma, but with certain adenomatous areas.
Harrison Cripps: Brit. Med. Jour., Lond., 1903, ii, 18.	Male...	60	Pain after heavy lifting 11 years before. Angioma the size of a child's head.	Slightly adh. to abd. wall; incised; escape of 50-60 oz. blood. Tumor enucleated by dissecting; Volkmann's spoon. Bleeding controlled by sponge pressure.	Abd. closed without drainage.	Recovery	Angioma partly calcified.
Dahlgren: Nord. Med. Ark., Stockholm. 1902, 3, f. ii, No. 14, 1-24.	Female	33	Over a year. Angioma from left obe, larger than a kidney—pedicle 6 cm. broad; 1.5-2 cm. thick.	Bleeding controlled by continuous catgut sutures. Tumor removed by cautery.	Omentum attached to stump.	Recovery	Gives good résumé of the literature.
Macnaughton-Jones: Brit. Gynec. Jour., Lond., 1901-2, xvii, 40-43.	Female	27	One year. Angioma, 3¼ x 3x2¼ inches at liver. Irregular spaces lined by endothelium and filled with blood.	Tied by numerous ligatures; little bleeding.	Pedicle packed above and below with iodoform gauze.	Died 18 hours after operation.	Much shock at operation.
Giulio. Filippini: Policlin., Roma, 1901, viii, Sez. Chir. 222-240.	Female	32	Tumor of left lobe the size of an adult head, 20x15x5.6 cm.	Rubber ligature and sutures.	Attached to abdominal wall.	Recovery	Angioma.
Giulio. Filippini: Same reference.	Male...	62	Cancer of the liver involving the entire left lobe.	Rubber ligature	Attached to abdominal wall and allowed to slough off.	Recovery	Primary cancer of the liver.
Duret: Ass. Franc. de Chir. Proc. Verb. Par. 1898, xii, 363-371.	Female	46	Six months. Carcinoma; 16 cm. in its greatest diameter.	Cut away as a wedge. Vessels controlled by a few sutures; raw surfaces approximated by continuous catgut.	Iodoform gauze drain; exerting pressure.	Recovery	Gall-bladder contained calculi.
Jonnesco: Bull. et Mém. Soc., de Chir. de Bucarest, 1902-3, v, 104.	Female	..	Size of a small orange, adherent to the transverse colon.	Tumor resected; a modified d'Auvray ligature employed.	Closed without drainage.	Recovery	Thought to be syphilitic. Wound opened on 3d day to let out some blood.
Haubold: Annals of Surgery, 1904, xxxix, 240.	Female	26	Eight months. Gumma, the size of a large orange.	Removed by blunt dissection with scissors.	Hot saline. Gauze checked oozing—surfaces approximated by deep catgut sutures. Drainage.	Recovery	Growth first thought to be malignant.
Léonté: Bull. et Mém. Soc. de Chir. de Bucarest, 1900-01, iii, 161-164.	Female	50	Adenocarcinoma in the right lobe, the size of a lemon. Weight, 813 grams.	Sutures placed; tumor removed.	. . . . .	Died in 24 hours. Anuria from renal disease.	No bleeding.
Thompson: Tr. Texas Med. Assn., Austin, 1899, xxxi, 216-229.	Female	30	Gumma, size of a small orange; occupied parts of both lobes.	Tumor removed with scissors; transfixed by two needles at right angles, Appl. of rubber.	Fastened to abdominal wall. Infection.	Recovery	Histologic examination showed gumma.
Nicholson: Interstate M. J., St. Louis, 1902, ix, 427-430.	Male...	39	3¼ inches broad; projected 2 inches from surface of liver.	Cut out with scissors; vessel openings closed with chromicized catgut.	Packed with gauze; partially removed 2d day, some bleeding. Removed 4th day; edge of abd'l wound repaired and closed.	Recovery.	
Pfannenstiel: Allg. Med. Centr. Ztg., Berl., 1898, lxvii, 177-179.	Female	..	Growth noticed years before. About 12 pounds. Abd. before operation, 116 cm. in circumf. (considerably more than that of a pregnant woman at term). Tumor pale white. "alabaster-looking," fluctuating—sprang from under surface of left lobe. On section composed of large and small blood spaces—some spaces as large as a walnut, others as big as an apple. Micro. exam. showed growth to be an angioma.	A furrow made in liver substance both anteriorly and posteriorly at base of growth. Tumor then shelled out partly by cautery, partly by blunt dissection—bleeding vessels controlled by catgut passed with a Deschamp needle; in part by pressure, in part by strong traction on tumor. Some broad clamps applied, stump about 15 cm. broad thus produced—tied with about 20 catgut sutures; tumor cut away with cautery.	Large funnel-shaped stump left, attached in upper angle of abdomen wound. Packed with sterile, non-impregnated gauze. Length of operation 1¾ hours. Pulse at end, 120-140. Discharge at first, bloody; later, bile.	Recovery	Resembled an ovarian cyst, but on vag. exam. uterus and appendages were clearly outlined. The continual traction of tumor had probably rendered the liver substance of pedicle firmer than normal. Very little urine at first, probably from great loss of blood; salt sol. given freely.
Maresch (Hochenegg) Ztschr: F. Heilk., Wien u., Leipz., 1903, xxiv, 39-50.	Female	5	Three years; at first slowly, later rapidly. Abd. greatly distended. Lymphangioma 20x18 cm.	Punctured, supposedly an ovarian cyst; pedicle about 7.5 x 2.5 cm. Collar of peritoneum drawn back. Tumor then dissected out bluntly with forceps and elevators. Tremendous bleeding from torn vein. Abd. full. Firm pressure made. Hem. controlled with catgut sutures and needle.	Incision 6 cm. long made toward right abdomen wall, 3 cm. below the xiphoid. Pedicle of tumor sewed into this transverse incision. Original incision then closed.	Recovery; discharged on 21st day.	Supposed to be an ovarian cyst.
Terrier et Auvray: Revue de Chir., 1898, xviii, 719.	. . . .	50	Cancer the size of a closed fist, probably secondary to growth in bowel. Adherent.	Chain sutures of Auvray. One vessel tied free-hand.	Packed with gauze...	Recovery	Fistula still remaining; silk sutures came out gradually.
Barkoff Russ. Chir. Arch., St. Peterb., 1903, xix, 70-72.	Female	40	Ten years; the size of a hen's egg; oval and yellow.	Cut out elliptical depression; approximated with catgut. No hemorrhage.	Closed without drainage.	Temporary recovery.	Echinococcus.
Cullen, Thomas S. . .	Female	30	Recognized less than a week before operation. Adenocarcinoma of liver, secondary to primary growth in left kidney. Growth size of child's head. (Fig. 5.)	Cut away with knife after application of mattress sutures. Raw surface approximated. (See Fig. 7 in text.)	Iodoform gauze drainage.	Patient in good health 8 mos. after operation.	Evidence of return in scar where left kidney was removed nearly 2 years ago.

ondary carcinoma, 1; adenoma, 6; angioma, 4; tumors of an indefinite character, 3; gummata, 9; biliary cysts (non-parasitic), 4.

Of the patients, 32 recovered and 6 died. The deaths were due to hemorrhage, shock or sepsis. Keen has collected 74 cases. Some of these are included in Terrier and Auvray's lists. Sixty-three of the patients recovered and 11 died—a mortality of 14.9 per cent.

The causes of death were: Shock, hemorrhage and exhaustion, in 8 cases; septicemia, in 2 cases; pulmonary embolism, in 1 case.

In this group of Keen's are three of his own cases; all three patients recovered. As mentioned elsewhere, Mikulicz has had six cases with equally happy results.

Patient.—On Jan. 6, 1903, I saw Miss T., in consultation with Dr. E. R. Trippe. The patient was 30 years of age and of very slight build. For six months she had felt a small lump in the left side, but had hesitated to speak of it until a week previously. It was first noticeable in the region of the left kidney and at first had increased in size gradually, but later at a much more rapid rate.

Examination.—On examination the left renal region was found to be filled by a tumor which extended upward under the ribs, and downward almost to the pelvic brim. It was slightly movable.

Operation.—On January 8 an incision was made over the most prominent part of the tumor. This incision extended from the quadratus lumborum behind, obliquely downward almost to the median line just above the pubes. The tumor was everywhere firmly adherent and was liberated with a great deal of difficulty. Only at one point was there any escape of its contents. Here the capsule had broken slightly, allowing the escape of a small amount of friable, carcinomatous-looking material. After liberating all adhesions and tying every bleeding point with catgut the renal vessels were exposed and tied first *en masse*, and then singly. The abdominal cavity was opened in several places as the tumor was intimately blended with the peritoneum. We were, however, able to protect the abdomen from infection. The muscles were brought together with silver wire, the skin with silkworm gut. The patient, although much shocked, gradually recovered. Her temperature rose on one occasion to a little above 100 F. She made an uninterrupted recovery and left the hospital at the end of the fifth week.

Result.—On March 9, 1903, I received a letter from the patient saying she was very much improved; the wound had healed entirely and she was feeling much stronger. I saw her from time to time and she showed continued improvement and regained perfect strength.

Subsequent History.—On June 2, 1904, I received a message from Dr. Trippe saying that the patient was not so well and that her temperature was 102.5. Five days previous to this the patient had noticed a small lump just below the free edge of the ribs on the right side. At first it gave her no concern, but apparently doubled[10] in size within two days and during the following two days again showed marked enlargement.

Examination.—When I saw her it occupied the region between the edge of the ribs and the anterior superior spine. It was round, tense and somewhat movable. We were very careful in our examination, fearing that it might be a friable secondary growth following the removal of the large carcinomatous kidney in January, 1903. Her pulse was rapid; her temperature was 102.5 F.

Operation.—As she was losing ground rapidly an immediate operation was decided on. An incision having been made over the tumor, it was found to be perfectly smooth and free from adhesions. The incision was continued upward to the free margin of the ribs (Fig. 5) and downward almost to the anterior superior spine. The growth proved to spring from the liver; it was larger than a child's head and was almost globular in form. The edge of the liver appeared as a slightly elevated ridge, forming a crescent over the center of the anterior surface of the growth. Attached to the inner side of the growth was the gall bladder. I carefully examined the liver, but failed to find any secondary growths and also was unable to detect any evidence of metastases in the abdominal organs or any thickening in the renal region on the left side. The right kidney was about half as large again as usual, and was perfectly normal, considering the absence of the other. The urine, however, contained some pus and a little blood. On careful examination it was imposible to determine whether we were dealing with a cystic new growth or an abscess formation. In the former case we were at a loss to tell why there had been as yet no adhesions and why the surrounding liver substance was so firm. On the other hand, it was difficult to account for the elevation of temperature if no abscess was present. After some hesitation we decided to remove the growth together with a small portion of healthy liver substance. The gall bladder was exposed, the cystic duct clamped and cut and the proximal portion of the duct tied off. The lower half of the liver could then be readily drawn out through the abdominal incision. It was everywhere walled off from the abdominal contents by gauze, and a gauze rope was securely fastened around the liver about an inch above the point at which the cut was to be made. A cautery was called for, but—fortunately, as after results showed—the instrument would not work. I then took a long, blunt needle and, starting from left to right, passed mattresss sutures through the entire substance of the liver. These were about 1 cm. apart and each one overlapped the other for about 2 or 3 mm. The greater number of sutures consisted of Pagenstecker thread, the supplementary ones being of catgut. After placing two or three mattress sutures I commenced to cut, the tumor at the same time being held taut. The sutures were then tied. This process of applying sutures and cutting and then tying was continued until the entire growth had been removed. Five or six large blood vessels were encountered, which spurted freely. These were picked up with artery forceps and tied freehand with fine Pagenstecker thread. The entire growth was removed without the loss of more than two drams of blood. After the sutures had been tied there was absolutely no bleeding from the surface. After removal of the growth there remained a raw surface fully 16 cm. in length and 6 cm. in breadth. On making traction on the sutures I found that the raw surface could be rolled in on itself so that the two halves formed flaps. These were brought together, until little or no raw substance remained. The ends of the sutures that had already been tied were utilized to bring the opposite sides together. Iodoform gauze was placed beneath the edge of the liver and also on its surface. Although the patient was apparently in a desperate condition when she went on the table, she stood the operation well, and when she was taken from the operating room her pulse was only 104. On the next day her temperature dropped to 100 F. The general condition was excellent and the pulse 84. To look at her one would hardly have realized that any operation had been performed. She made a rapid recovery and left the hospital in about four and a half weeks.

Result.—I saw her on Aug. 4, 1904. She was looking very well and had regained her color; the wound had practically healed. She had little or no pain. On the left side there were areas of suspicious thickening in the old renal scar.

Note of Sept. 7, 1904: On examination some of the liver sutures are seen working their way through a small sinus. They are giving no trouble, however. The patient is up and around, apparently in good health. On the left side along the linear incision, where the kidney growth was removed a year and a half ago, several nodules are felt. These are rapidly increasing in size. One of them is fully 6 cm. in diameter and

10. The tumor had evidently existed for a considerable length of time, but was not recognized until it was suddenly forced from beneath the ribs on account of its increasing dimensions.

has already become slightly attached to the skin. It is bluish in appearance.*

PATHOLOGIC REPORT OF KIDNEY.

Miss T. Pathologic No. 6364. The specimen, roughly speaking, is kidney-shaped, irregular in outline and covered by many adhesions. It measures 20x13x12 cm. Attached to the lower end is the ureter, which is about 4 mm. in diameter. On palpation the tumor seems to be cystic. This condition is more noticeable at the upper pole. Toward the lower end the growth is firmer. On section little or no renal tissue is demonstrable. The tumor has a capsule varying from 2 to 5 mm. in thickness. Passing off from this capsule into the tumor are many connective-tissue partitions which divide the growth into large and small nodules. The greater part of the tumor is soft, and consists of a spongy-looking material resembling carcinoma. The more solid portions of the growth are homogeneous. At numerous points there has been disintegration of tissue. The growth, as a whole, is yellowish-white in appearance, but where degeneration has taken place the tissue is of a bluish tinge or is distinctly yellow.

Histologic Examination.—The capsule is composed of fibrous tissue, sharply outlined from the tumor, which is made up of a glandular growth. The gland type is particularly well marked. There are long stems carrying delicate blood vessels and covered by a single layer of epithelium. Passing off everywhere from these stems are secondary stems, likewise covered by one layer of epithelium. The epithelial cells are low cylindrical or cuboidal in type. Their nuclei are round or oval and stain fairly deeply. In many places a definite glandular arrangement is visible, but the tendency toward the papillary formation is everywhere in evidence. Here and there nuclear figures are visible. The specimen was hardened *en masse;* consequently one would not expect to find many cells undergoing division. In the older portions of the growth the cells have so multiplied that they form a homogeneous mass. At many points coagulation necrosis has taken place and the cells do not stain at all. Such an area, as a rule, is entirely devoid of infiltration, but here and there are aggregations of polymorphonuclear leucocytes. At some points are masses of bright orange pigment, evidently a result of old hemorrhages. Such masses have a fuzzy appearance and closely resemble the outer covering of a chestnut. The specimen is undoubtedly from an adenocarcinoma. The cells of this growth bear a striking resemblance to those of the collecting tubules of the kidney. Sections of the ureter just below the pelvis of the kidney show that it is perfectly normal.

PATHOLOGIC REPORT OF LIVER TUMOR.

The specimen consists of a tumor removed from the lower portion of the liver. Attached to this are the gall bladder and a small amount of normal liver substance. The tumor is 16 cm. long, 14 cm. broad and 13 cm. in its anteroposterior diameters. It is slightly lobulated, has a smooth surface and appears gradually to blend with the healthy liver substance. Passing over the middle of the lower surface of the tumor is a thin strip of liver substance representing all that remains of the lower edge of the liver. The raw surface corresponding to the liver attachment is 16 cm. in length, 6 cm. in breadth. The liver tissue is apparently normal. The growth on palpation seems to be filled with thick fluid contents and strongly suggests an abscess.

The specimen was hardened in alcohol before being opened. It is surrounded by a capsule 1 to 2 mm. thick. The interior is composed of a very soft homogeneous substance. In the outlying portions, however, it is rather spongy. In the hardened specimen the growth presents a mottled appearance; in places it is reddish-blue, at other points yellowish-white in color. Only a small amount of healthy liver substance is present. The gall bladder is firmly attached to the upper and inner side of the growth and measures 7 cm. in length, 3 cm. in breadth.

To describe the histologic appearance of this tumor would be to repeat what has been said of the histologic appearance of the kidney. It is identical in every particular. In other words, it is an adenocarcinoma secondary to the primary growth in the kidney. It also contains numerous areas of degeneration.

In 1892 T. S. Westcott tabulated 20 cases of partial resection of the liver for Dr. Keen. A second article by Keen, in 1897, contained a tabulation of Cases 21 to 59 by G. W. Spencer. For Keen's article, published in 1899, H. H. Cushing and M. L. Downs have tabulated all additional cases to that date. The accompanying tabulation includes the cases that I have been able to gather from the literature since 1899; for convenience the lines laid down by Keen have been followed.

This case is unusual for the apparently rapid development of the hepatic growth, the symptoms being of less than a week's duration. It is further unusual to find a single metastatic nodule in the liver following a primary growth in the kidney.

Considering the fact that the patient had only one kidney, that the urine contained blood and pus, that the temperature was 102.5 F., and the physical condition poor, I advised letting the growth alone. Dr. Trippe, who was not only the patient's physician, but also a near relative, on the grounds that her condition was rapidly growing worse and that she could not last many days, insisted on its removal. That he was right is clearly shown by the temporary recovery of the patient, and I freely confess that any credit for the operation is due entirely to him. Certainly no case that I could find in the literature offered less prospects of even a temporary success, but Dr. Keen, when reporting his last case, said: "After my experience with these three cases I should hardly hesitate to attack almost any hepatic tumor without regard to its size."

*Feb. 24, 1905: Dr. Trippe informs me that from time to time a few stitches have come away from the liver, but have occasioned absolutely no inconvenience. The nodules in the cicatrix in the side where the kidney was removed are somewhat larger, but they do not seem to cause her any inconvenience. "Her general condition seems to be very good."

RECLINATION OF THE LENS:

UNDER CERTAIN CONDITIONS A JUSTIFIABLE OPERATION.*

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A study of the literature of couching reveals the fact that earlier writers made a sharp distinction between depression of the lens and reclination, in the one the lens being pushed bodily downward while in reclination an attempt is made to turn it on its axis so that ultimately its anterior surface is uppermost. In reality, however, an attempt at one procedure is likely to result in the other, so little is the course of the lens under our control, and no distinction will be made in this paper, although as late as 1836 Argyll Robertson[1] said he had never seen the lens rise after reclination, although he had frequently seen it after depression, and that the former, if properly performed, is rarely productive of much inflammatory action.

Depression is the oldest known operative procedure for cataract,[2] and either by the insertion of the needle through the cornea, keratonyxis, or the sclera, scleronyxis, until the middle of the eighteenth century held complete sway, when it was superseded by extraction, and if since then it has been held in slight respect it is

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. J. Argyll Robertson: Edinburg M. & S. J., vol. xlvii.

2. Czermak: Augenarztlichen Operationen, Wein, 1904, Heft. 13-14, pp. 823-827.

largely because it has been forgotten and not because it is without value.

A description of the operation is found in Celsus,[3] and Petit states that it was in vogue in Egypt during the reign of Ptolemy Philadelphus. It gradually fell into the hands of charlatans and, although Wilburg[4] in 1785 attempted its revival as an original operation, it was mostly practiced by fakirs devoid of medical skill or knowledge, who traveled around operating in public and, after receiving their fee, departed for new fields, with no thought of the future welfare of the unfortunate sufferer, and the frequent loss of sight which resulted was in large measure due to the entire lack of care in the after-treatment of the case, and the unfavorable results must not be accorded full credit in estimating the ultimate value of the procedure.

The method employed by surgeons was with slight variation that described by Velpeau[5] and Lawrence,[6] while the more sensational procedure of the quack is described in the following account of the methods used by the native operators in India, taken from the *Medico-Chirurgical Review*, 1858.

"The operator commenced by wrapping a thread around the blade of a lancet to within an eighth of an inch of the point and a brass probe with a blunt point was similarly treated. The patient was now seated on the ground and the operator placed himself in front. He then opened and fixed the eyelids with the fingers of his right hand and desired the patient to look downward and, doing so, he thrust the lancet into the eye about a line beyond the cornea and, on its penetrating to the depth allowed by the thread, withdrew it and closed the lids. In a few seconds the eye was again opened and the probe was introduced with a boring motion till it had fairly entered the eye, when he turned the point downwards. A small tassel of lint was now placed between the handle of the probe and the cheek and the eyelids closed. A lighted ball of charcoal was now brought close to the eye for a few seconds, then elevating the handle of the probe, an endeavor was made to depress the lens. Failing to do this, the lids were again closed with the probe *in situ* and a second attempt was made." When the lens yielded and, with the probe still in place, the patient was asked if she could see, then the probe was withdrawn, the eye moistened with a cloth and the patient allowed to walk about, expecting the eye to be well in a few days."

Very few surgeons of the present day have had personal experience in couching the lens and, in the light of the published statistics of successes in extraction and of untoward results in traumatic dislocation of the lens, it is not to be wondered at that the procedure has few adherents. Yet one must not forget that before extraction was known reclination was in a measure successful, and that the effect of traumatism in the cases we see today is such an important factor in prognosis that were reclination practiced with due attention to aseptic methods and with the improved instruments at our hands, there is no doubt but that a certain success could be attained.

The argument of this paper is, first, that reclination has been successful in many instances; second, that it may be safely done; third, that it is under certain conditions entirely justifiable.

3. Brown: Historical Review of the Surgical Treatment of Cataract. Annals of Oph., April, 1904.
4. Wilburg: Betrachtung Operationen des Staares, 1785.
5. Velpeau: Op. Surg., vol. III, p. 270, 1847.
6. Lawrence: Treat. of Dis. of Eye, London, 1844.

Evidence is not wanting to prove the truth of the first assertion. Argyll-Robertson,[1] in a paper read before the Medico-Chirurgical Society of Edinburgh in 1836, cites the following statistics of the operation for cataract by various methods:

Operator.	Cases.	Cured.	Relieved.	Failed.
Graefe	14	12	..	2
Hotel Dieu	43	24	4	15
Bowen	160	154	..	6
Lusardi	5,034	4,168	..	866
Dupuytren	306	263	..	43
Cloquet	166	97	..	69
Morand	6	3	..	3
	5,729	4,721	4	1,004

This gives 82 per cent. of successes, although it must be borne in mind that the acuity of vision which was then termed success was not that of to-day, and that ability to distinguish large objects and to safely go about was considered a cure. He then personally reports 115 cases of reclination with successes in 94, or 81 per cent., and certainly one is justified in assuming that reclination offered as good results as the other methods then in vogue. He says that if properly performed, reclination is rarely productive of much inflammatory action, and reports two cases where an opportunity was offered to examine an eye some years after a couching and in both the lens was firmly bound down by the hyaloid membrane with the vitreous perfectly clear and with no trace of the course of the lens, and quotes Scarpa as saying that internal ophthalmia (iridocyclitis) had only happened in a single instance during a long practice.

Power[7] says that it is singular that a method of such antiquity and even now practicable should have passed so completely, and quotes Hornley, who reported in 1813 50 cases with only two failures, and Maynard, who reported 16 cases of extraction where the other eye has been couched by native operators often with brilliant results.

Andrew[8] reports a case where the vision was 20/70 eighteen months after dislocation of the lens and a case where traumatic dislocation resulted in a vision of 20/30, while a reclination of the fellow eye with fluid vitreous and tremulous iris gave a vision of 20/70.

Beer says: "I have neglected no opportunity of examining carefully after death the eyes of those who had undergone depression or reclination. In almost all I have found the firm, undissolved lens generally much diminished."

Haynes Walton[10] says: "Although displacement is a very inferior operation to extraction, it should not be condemned or made obsolete." And regarding the ultimate state of the cataract he says: "If the capsule is lacerated it is absorbed; if not, it may lie for years, and this is proved by dissection after operation."

Truc[11] treated two cases with depression and gives the following indications for this method: Risk from restless patients; violent bleeding and suppuration of the eyes; and Delorde[12] believes that the historical operation of depression should not be wholly abandoned as in certain cases good results may be obtained.

Barrett[13] reports a case of couching for cataract with perfect vision thirteen years afterward as follows:

The subject of the following report presented herself at the Eye and Ear Hospital for treatment. Mr. Gault investigated

7. Power: Brit. Med. J., Oct. 26, 1901.
8. Andrew: Brit. Med. J., Dec. 30, 1882.
10. Haynes Walton: Prac. Treat. on Dis. of Eye, 1875, pp. 808-815.
11. Truc: Deux cas de l'abaissement de la cataracte. Congr. Int. d'ophth., Aug. 4, 1900.
12. Delorde: De l'abaissement de la cataracte. Ann. d'oculiste, 1901.
13. Barrett: Australian Med. J., 1894, xvi, pp. 381-382.

the history and obtained for me this account. I think that it is only necessary for me to say that, if such an excellent result could often be obtained from couching, the ordinary relatively difficult cataract operation would fall into rapid discredit.

M. W., aged 60, widow for twelve months, a healthy looking woman, who says that she has never ailed at all. Thirteen and a half years ago she had an operation for cataract (she calls it couching), performed on her left eye by an Indian oculist at Ballarat. There was no anesthetic used and she was able at once to see the dark face of the operator. The vision had been failing in the left eye for two or three years and it sank to perception of light, before operation. Has had no trouble in the left eye since the operation with the exception of occasional attacks of slight pain in the region of the supra-orbital nerve, for which she used blisters to the temple. There is also somewhat troublesome epiphora.

Condition of the left eye: Some dilatation of the lachrymal sac; slight chronic conjunctivitis, with a little general ciliary congestion; cornea clear; good anterior chamber; iris healthy; wobbles freely with movements of the eye; pupil reacts well to light; vitreous free from opacities. In its lower and anterior part is seen the shrunken remains of the lens, just behind the margin of the iris and resting on the ciliary body. The lens does not appear to move. Fundus normal. Tension normal. L. V. c. + 11 D. Sph. + 2.5 D. Cyl. horiz. = 6/6.

Canton[14] reports a case where useful vision was obtained for nearly twenty-five years.

Bourgeois[15] operated on three cases with permanent results and considers as indication the following: Fear of expulsion, bleeding, threatened infection, chronic bronchitis and fluid vitreous.

Enough authorities have been quoted to show that where personal experience has been had the operation of reclination is considered at times not only feasible but advisable. More modern writers, however, either decry the operation or are silent.

Meyer[16] says that it possesses only historical interest. It is constantly menaced with serious complications and merits no place in surgery.

Berry[17] does not mention it.

De Schweinitz[18] gives as his opinion that couching is no longer practiced.

Juler[19] believes that trouble nearly always arises and that the eye is generally lost from irido-choroiditis or glaucoma.

Noyes[20] says that it has become obsolete.

Fox[21] does not mention it.

I assume that the opinions of ophthalmologists of large experience who are not authors of text-books are quite necessary in forming an estimate of the value of any procedure and to this end I sent to 100 prominent surgeons in this country the following letter:

Jan. 1, 1904.

Dear Doctor:—Will you kindly aid me in getting a consensus of opinion on the advisability of couching the lens in cases of cataract where one eye has been lost by suppuration after an operation and there is present, either from a dacryocystitis or conjunctivitis, an infection by the staphylococcus or streptococcus. A recent article advocated a dislocation of the lens in such cases, but I find that most surgeons are opposed to the procedure and I am desirous of knowing whether the operation has been done often enough to warrant any conclusions. I shall esteem it a favor if you will express your opinion and return this letter to me.

1. Have you had personal experience in this operation? (*a*) How many cases? (*b*) Why was it performed? (*c*) What was the ultimate result?

2. Do you believe it is ever justifiable? If not, why not?

3. What would be your treatment of such a case as that outlined above?

4. On how many such cases have you performed linear extraction and what was the ultimate result? Yours truly.

CONCLUSIONS.

Replies received from seventy-six are appended in tabulated form. From a study of these seventy-six replies, representing the opinions of the most prominent surgeons in this country, we may draw the following conclusions:

1. Of the entire number only seven have personally done the operation, and with one exception they believe it both justifiable and at times advisable.

2. Twenty-two have not done the operation, but believe that it is justifiable in cases where one eye has been lost by hemorrhage, in the very old, the weak and the insane, as a last resort when treatment of morbid conditions fail, when the general health is so poor that the needed restriction after extraction would cause serious risk or when there is prospect of early death.

3. Forty do not believe it justifiable and prefer extraction with certain precautions.

4. Seven do not express an opinion.

5. The agreement on the treatment of cases with dacryocystitis is remarkable; extirpation of the sac, obliteration by cautery or tying the canaliculi are advised by all.

6. In cases of intractable conjunctivitis the opinions are not conclusive. "Treat the conjunctivitis," "treat until cured," "treat until the infection disappears" is good advice and is followed by all of us, but suppose that the trouble is not cured, that in spite of all treatment infection persists—what then? If, as Dr. Casey A. Wood says, "A test bandage should give negative results for at least two days before extraction is thought of," many of these cases can never be operated on, and the patient is doomed to blindness, for Dr. Chandler asserts that 90 per cent. of his cases show staphylococci before operation, and Weeks says, "Operate only after all discharge has ceased." Experience shows that in certain cases it is impossible to get a sterile culture from the conjunctival sac.

The various procedures recommended in these cases are conjunctival flap dissected up and brought over the corneal wound, stitching the flap, application of a solution of silver nitrate to conjunctiva before operating, open dressings, daily use of protargol, subconjunctival extraction,[2] constant application of cold without bandages, iodoform dusted into the eye, preliminary iridectomy; many, however, fail to state that they have successfully treated such cases by these methods and their argument is *a priori* and not fortified by experience.

The advisability of the operation of reclination may certainly then be considered:

1. On the aged and infirm or those suffering from exhaustive diseases.

2. When there is non-curable infection of the conjunctiva or lacrimal sac.

3. When one eye has been lost by suppuration or hemorrhage following operation and a similar result is feared.

4. In obstinate bronchitis.

14. Canton: Tr. Path. Soc., London, 1850, iii, p. 182.
15. Bourgeois: Die Depression des Staares. Franz. Ophth. Gesellsch., 1902.
16. Meyer: Dis. of the Eye, 1887.
17. Berry: Dis. of the Eye, 1887.
18. De Schweinitz: Dis. of the Eye, 1892.
19. Juler: Ophth. Science and Pract., 1893.
20. Noyes: Dis. of the Eye, 1890.
21. Fox: Dis. of the Eye, 1904. Indian Med. Gazette, June, 1901

5. In fluid vitreous with tremulous iris.
6. In the insane or unmanageable patient.
7. In the very deaf where the assistance of the patient can not be secured.

REPORT OF A CASE.

History.—Mr. A., American, 64, first came under observation in September, 1901, with the following history: For some years he had suffered from diabetes and at intervals, under strict diet, had been fairly well, but most of the time his health was poor and his condition was aggravated by certain ailments which dated from an extended army service and the occasional immoderate use of alcoholic stimulants. He is a heavy smoker. Family history is negative.

Vision began to fail from incipient cataract about three years ago and progressed till it was difficult for him to get about alone and, as the changes were mainly nuclear, he was advised to have a preliminary iridectomy made on the right eye in hopes that more speedy maturation would occur. Before doing this, however, for nearly a year he was under the care of a physician in Philadelphia, who attempted to absorb the cataract by massage. Failing in this, he was again advised to have an iridectomy and this was done in the summer of 1901. Infection of the wound very promptly followed in twenty-four hours and a few days later the eye was removed.

When first seen the stump was healed, but there was a mucopurulent secretion which kept the socket continually moist, glued the lids together and caused an excoriated condition of the lids most noticeable at the inner canthus. The left eye presented an immature nuclear cataract with vision under a normal pupil reduced to fingers, but increased somewhat with a dilated pupil. There was the same sticky secretion as in the other eye and the edges of the lids and cutaneous borders were red, excoriated and moist. There was no dacryocystitis, although there had been a moderate rhinitis for some years.

With the occasional use of a weak solution of scopolamin hydrobromate and the frequent cleansing of the eyes and lids with a solution of boric acid he got along comfortably until December of that year, when the rapid maturation of the lens so impaired the vision that the question of operation became urgent.

Bacteriologic Examination.—Dec. 13, 1901, by Dr. F. T. Fulton, pathologist of the Rhode Island Hospital, with the following result:

Two smears were made from the left eye and one from the right orbit, and cultures from both the left eye, the right orbit and from the nose.

Right Eye: Smear showed fairly numerous pus cells, a few large desquamated epithelial cells and an occasional bacillus which stained by Gram's method. Cultures contained a few colonies of white staphylococci and a few colonies of *Staphylococcus pyogenes aureus.* There was also in the culture a contamination with the bacillus subtilis.

Left Eye: Smear showed a few pus cells and desquamated epithelial cells and a few cocci. Culture showed numerous yellowish colonies of staphylococci, a few white colonies of staphylococci, and a few colonies of short, deeply staining bacilli. The *Staphylococcus pyogenes aureus* was in this culture, the chief organism.

Nose: Culture showed a few white colonies of staphylococci and fewer colonies of staphylococcus aureus.

It was decided to make a test of the behavior of the eye under the treatment to which it would be subjected after operation and, on December 28, he entered the hospital. The left lids were brushed with a 2 per cent. solution of silver nitrate and for two days they were treated with a 50 per cent. solution of protargol four times a day, with frequent washings of boric acid in solution. On the third day, after a thorough cleansing of the brows, skin and lids with a 1 to 1,000 bichlorid, the lids were filled with protargol and a sterile dressing loosely applied. There was during this time a marked increase in the sugar eliminated, reaching about 5 per cent. with 3,800 c.c. of urine. Each time the eye was dressed it was flushed freely with sterile salt solution and the lids filled with protargol. On January 3 a second examination was made.

Report of the Pathologist.—Cultures taken Jan. 3, 1902. This time there were taken smears and cultures from the skin near the inner canthus of the left eye, from the conjunctiva of the lower lid of the left eye, from the secretion on the external surface of the eyelid of the left eye, and a smear and culture from the right eye.

Right Eye: Smear showed only rarely a pus cell. No organisms found. Culture showed no colonies. In the water of condensation, however, there grew a few staphylococci which resembled the staphylococci epidermidis albus.

Left Eye: Smears from the inner canthus showed no pus but a slight amount of granular material. Cultures showed no growth. Smear from the secretion on the external surface of the lid showed a few desquamated cells and a little mucus. In the culture about fifty colonies of the *Staphylococcus pyogenes albus* developed. Smears from the conjunctiva showed a very few cells and a small amount of granular material. Culture showed one colony of the *Staphylococcus pyogenes albus.* These organisms from the lid and conjunctiva liquefied gelatin more rapidly than the one from the right eye.

Dr. Fulton adds: "The most striking thing in comparison with the former examination is the reduction in the number of bacteria in general and the entire absence of the *Staphylococcus pyogenes aureus* on January 4 after the systematic and persistent use of protargol in treatment."

This experiment seemed to prove that protargol would control the growth of staphylococci, but the effect of the salt in such strength on a fresh corneal wound was uncertain. As soon as the patient was allowed exercise and without any change in his diet his urine dropped to 800 c.c. and the sugar to less than 1 per cent. For a month protargol was used daily with careful attention to cleanliness and frequent douching of the nose, and on January 22 a third examination was made.

Cultures Taken Jan. 22, 1902.—This time cultures were made from the left conjunctiva, from the external surface of the lid, from the right eye and from the right cheek.

Right Eye: Smear showed no pus and a few deeply staining bacilli. Culture showed three kinds of colonies. 1. About one-half dozen colonies of *Staphylococcus pyogenes aureus* which rapidly liquefied gelatin. 2. About twenty-five smaller white colonies of a slowly liquefying staphylococcus albus, apparently the epidermis. 3. About fifty colonies of large, irregular, curved, deep staining bacilli.

Cultures from the right cheek showed the fewest colonies of any of the cultures taken. Two kinds. 1. Three yellow colonies of staphylococci. 2. Three small white colonies.

Left Eye: Smears from the conjunctiva contained no pus but a few short, deeply staining bacilli. Culture contained three kinds of colonies. 1. About thirty to forty yellowish colonies, similar to those in the right eye. 2. About equal number of smaller white colonies resembling the white colonies in the right eye. 3. One hundred to two hundred very minute colonies of short, irregular, curved, deeply staining bacilli.

Skin Near Angle: Smears showed a few pus cells and a few cocci. Cultures showed large numbers of closely packed, golden yellowish colonies of *Staphylococcus pyogenes aureus.* Culture also showed a very few of the short bacilli.

The result was disappointing particularly as the frequent washing of the eyes seemed to increase the eczematous condition of the lids and they were at all times moist. The protargol also produced a certain amount of argyrosis. For several weeks then the lids were kept filled with a 50 per cent. ointment of iodoform, the punctum was dilated and syringed freely and then powdered iodoform was dusted inside the lids twice a day, with careful diet and attention to exercise, until his general condition was somewhat improved and then a fourth examination was made. The continued use of the iodoform, however, irritated the cornea and there was a small spot of ulceration which healed rapidly on the cessation of the use of the powder.

Cultures Taken April 22, 1902.—Cultures were taken from

the skin of the lower lid of the left eye, from the conjunctiva and from the left side of the nose, also from the right orbit, with the following result:

Right Eye: Smear contained a few pus cells. Culture contained a few yellowish colonies of staphylococci and a number of white colonies of staphylococci. Cultures also contained a few curved deeply staining bacilli.

Left Eye: Smears from the skin of the left eye showed a few pus cells, a few desquamated epithelial cells, and some mucus. Culture showed about fifty whitish colonies of staphylococci and one or two yellow colonies of the same. Smear from the conjunctiva showed fewer pus cells than on the skin surface of the lid. Culture showed two white and five yellowish colonies of staphylococci. These did not liquefy gelatin.

Nose: Smear showed no pus cells. Culture showed about thirty colonies, some yellow, others white. These were staphylococci.

Cultures Taken April 28, 1902.—Cultures were taken from the conjunctiva, skin on the left lid and from the left side of the nose.

Left Eye: Smears from the skin and from the conjunctiva showed no pus cells or cellular elements, nor any bacteria. Culture from the conjunctiva showed about a dozen colonies of white and about a dozen yellow colonies of staphylococci. Culture from the skin showed about fifty colonies of *Staphylococcus pyogenes albus.*

Nose: Smear showed a slight amount of mucus and a few mononuclear cells, but no pus nor bacteria. Culture showed a number of colonies of the staphylococcus albus and a few small colonies of deeply staining, curved bacilli.

Consultation.—I did not feel like assuming the responsibility of an operation and at my request the advice of an eminent surgeon in New York was sought. He advised against operation, but thought that the conjunctivitis could be cured and then the operation would be safe, and suggested the same remedies that had been faithfully used for three months, so the journey was extended to Philadelphia and the case laid before a surgeon of great experience, who thought that the condition would probably not further improve by treatment, but that by an iridectomy, a conjunctival flap and an open dressing there was a chance of success. He did not, however, accede to my request to assume the responsibility of the case by operating himself.

During the summer and fall the patient kept up the cleansing process daily, with the constant use of various astringent collyria, lived out of doors and tried to improve his general condition in every possible way, and in December, 1902, another test was made with the same result, a culture from the left eye showing a hundred colonies of the staphylococcus aureus. Influenced largely by an article by Dr. George F. Suker,[22] I then proposed the operation of reclination and, after due consideration and with a full knowledge of the possible outcome, the patient consented and the operation was done on June 1, 1903.

Operation.—With rigid adherence to the principles of asepsis, with a dilated pupil and the patient in a sitting position, the couching needle was entered 4 mm. from the corneal margin and carried close to the iris till its point engaged the lens at its upper fourth and then by a rotation of the handle, keeping it always in the same axis, the curved point was made to press the lens backward and downward. It was my aim to rupture the capsule above and allow the lens to fall backward like a hinge, but after a few moments of steady pressure it tore in a vertical slit and the lens, turning on a vertical axis, slipped through the rent and disappeared. There was immediate restoration of vision without pain or discomfort, save from the sudden glare of light. The iris immediately contracted to about 4 mm. although the anterior chamber was not evacuated, and at no time since then has it been possible to obtain a maximum dilatation.

In hopes that some shreds of capsule might become attached and, if the lens was not allowed to move, would so bind it in its new position that its subsequent rising would be impossible, the patient sat in an armchair with a specially devised headrest, so that he could sleep and yet keep the head erect for about four days. For two days ice compresses were applied for fifteen minutes in each hour. There was not the slightest sign of inflammatory action and I was able at all times to see the edge of the lens, but after the first twenty-four hours I could detect no motion imparted to it by moderate movements of the eye, although there was a tremulous iris.

Result.—The patient was kept quiet for three weeks and then allowed to walk about with much improved vision, but the rent in the posterior capsule closed quickly and presented an opaque membrane through which clear vision was impossible. From July 1, with a +8.0 lens, the patient went about the streets with comparative ease, was able to recognize friends and transact his business and, save on one occasion after indiscretion in diet, had no trouble with the eye. On September 21 the lens could not be seen, the eye was quiet and with +8.0 the vision was approximately 4/50. The first week in November found him actively engaged in the political campaign and the first evidence of an inflammatory action was noticed the day after election when, by his own story, he smoked twenty cigars. This subsided in twenty-four hours with ice and atropin and, on November 24, I divided the posterior capsule without any resulting inflammatory action, and, on December 3, the vision with +11.0 (+) 1.50 C. 90° was improved to 0.4.

Late in December he went to Washington to attend a meeting of the National Republican Committee and while there began to have pain in the eye. For about two months after his return there was an active iridocyclitis with great injection and pain, but at no time was the cornea involved or pupil occluded and the field was good. The disease was combated by every means in our power, but the greatest relief was experienced from leeches and mercurial inunction. Atropin, at times combined with dionin and cocain, was used all the while, but the pain was excessive and the general condition soon began to show the effect of it, there was a rapid increase in the sugar which later yielded to a stricter diet, but at the expense of physical weakness.

The pain was seldom located in the eye, but seemed purely neuralgic in character and was either at the ala of the nose, over the left nasal bone or at the vertex and would be excited instantly by a loud noise, turning in bed, the pressure of a pillow, the fatigue of talking or even listening to conversation, and presented many of the characteristics of facial tic. The eye would be comparatively white, it could be opened without pain, vision was good enough to allow him to get about the room and he would be feeling well when suddenly the pain would attack him, the tears would begin to flow and the eye would immediately become suffused and reddened; after an attack lasting from a few minutes to a few hours, the eye would again become dry and the redness subside.

Repeated attacks, however, during a period of two months seriously menaced his strength and the eye was not looking well, although the pupil was still clear and, when free from pain, the vision was fairly good. That this pain was not due to an active inflammation in the eye itself is proved by the fact that for days at a time there would be no injection, the sclera would be white and there would be neither photophobia nor lacrymation till an attack of pain would immediately suffuse the eye, and because repeatedly the application of cocain to the nose or a brisk counter-irritant over the forehead would at times stop the pain and almost immediately the redness in the eye would disappear. His general condition is now slowly improving, the attacks of pain are less frequent and not so severe and for quite a long time—some weeks—he has had no trouble with the eye. The vision is not good, but enables him to get about and to distinguish objects in the room and, if allowed to use his glasses, would certainly be much improved. If the diabetic neuralgia can be controlled I believe that he will ultimately regain some of the acuity of vision he had last fall and six months after the operation.

22. Suker: Am. Jour. Ophth., June, 1902.

My reasons for doing a reclination of the lens in this case instead of an extraction are, briefly:

1. The first eye was lost by suppuration after an iridectomy, an unusual occurrence.

2. The existence of a chronic intractable conjunctivitis with mucopurulent discharge and with the tarsal edges continually excoriated by reason of its irritating properties promised a probable infection.

3. The existence of diabetes and consequent impairment of nutrition.

4. A disinclination on my part to do an extraction with the probability of speedy and complete blindness and an unwillingness to experiment on a patient whose prominence in my city and state rendered my action subject to public comment and criticism.

The result of the operation, while in a measure unfortunate, had yet a certain degree of success and satisfies me that the operation can be safely done; that it affords a means of restoring sight where extraction is dangerous and that the dangers attributed to it by so many surgeons are the dangers to be expected and feared, but which do not necessarily follow. I believe that reclination should not be relegated to complete oblivion, but that in a certain class of cases like those enumerated by Power and Suker it is not only justifiable, but advisable.

REPLIES OF THOSE WHO HAVE DONE THE OPERATION.

DR. E. E. HOLT, PORTLAND, ME.—I have performed one operation by this method, using it because the other eye was lost by hemorrhage after operation. In the attempt to couch, the lens was broken up by the knife needle. It was absorbed in six weeks. The ultimate vision was 0.6. I believe the operation justifiable in such a case as that cited. This experience would lead me to do the operation by breaking up the lens a little, rather than to displace it bodily, as there was no swelling of the lens substance. It is impossible for me to tell on how many cases of infection by the staphylococcus or streptococcus I have performed linear extraction, as I have not had cultures of many, but in some cases it has been impossible to free the conjunctival sac from mucopurulent matter, and I have operated, after operation filling sac full of sterilized iodoform. The results have been good. I recall one case with primary suppuration. The sac was syringed with 1 per cent. carbolic acid solution, and carbolic acid, 25 per cent., was applied to edges of corneal flap. The eye was saved with a vision of 0.5.

DR. HASKET DERBY, BOSTON—I performed the operation once in a case of insanity. The case promised well, but was lost sight of, and the ultimate result is unknown. I think the operation distinctly justifiable under the conditions noted in your case. It is impossible to tell on how many cases of infection I have done linear extraction, as my hospital career ended before bacteriology had assumed prominence.

DR. JOHN H. THOMPSON, KANSAS CITY, MO.—I performed reclination once on a very old man with diabetes. There was considerable reaction for six days, but the ultimate result was good. The operation should be done more often than it is. Notwithstanding published statistics, very many patients lose their eyes from traumatic inflammation. In your case cited, I am inclined to think dislocation offers a better chance. I have done ten or more linear extractions on similar cases, with 70 per cent. good results. Suppurating cases have come unexpectedly, and those thought to be dangerous have come out all right.

DR. J. L. THOMPSON, INDIANAPOLIS—I have had possibly a dozen cases, but only performed in case of fluid vitreous. The first was in a woman of 45 years, with lamellar cataract from infancy. I did a preliminary iridectomy, intending extraction, but found fluid vitreous. The eye was bandaged and the lens couched six weeks later. A few months later I did the same operation on the other eye. Both did well. Five years ago the vision was 20/40. I should not care to do the operation without preliminary iridectomy (small) as safeguard against iritis and closure of pupil. I consider the operation justifiable, but not in the case cited by you, as there would be danger of suppuration in doing the iridectomy. In such a case I should obliterate the canaliculi and, if possible, the sac before doing any operation.

DR. H. BERT ELLIS, LOS ANGELES, CAL.—I performed couching in one case because of chronic dacryocystitis. The result was very good for a year, and then vision diminished to perception of light and then to degeneration of vitreous. I consider the operation occasionally justifiable, but ordinarily not so because of the liability of setting up vitreous trouble. In your case I should treat the dacryocystitis and chronic conjunctivitis for some months before operating. I have done two linear extractions on similar cases with excellent results, and have another now pending.

DR. C. M. HOBBY, IOWA CITY, IOWA—My personal experience in couching is of two kinds—couching done by others, and the little done by myself. I have performed the operation myself but once, in a patient of 92, with arteriosclerosis and overripe cataract. I was then doing cataract operations under ether anesthesia, it being before the days of cocain, and it was considered to be dangerous in this case to attempt general anesthesia. The result of the operation was good, but since cocain anesthesia I have not been able to reconcile the advantages of reclination in rapidity and ease to the added risks, and have therefore always made extraction. My one successful reclination taught me that there was, however, vastly more skill required than in extraction, and my fortunate result was a piece of luck. Dr. J. C. Hughes of Keokuk, Iowa, probably made nearly a thousand reclinations prior to 1880. Dr. Hughes was a skillful surgeon of the older generation of the day, and couched cataracts, as he has made lithotomies, fearlessly, and with results that would astonish our present surgical mentors. I never saw him do the operation, and I only met the bad results and occasional good ones seeking duplication from his last two hundred cases, but I saw enough of the results to recognize that it can give prolonged good results, and that the occurrence of sympathetic ophthalmia in the other eye or secondary glaucoma in the eye operated on is by no means necessary.

In the case made the basis of your question, I am inclined to think the operation not only justifiable, but the best possible, if the infective danger can not be controlled primarily. I believe that most of these cases, whether of conjunctivitis or infective dacryocystitis, can be controlled, and if the infective source of danger can be eliminated it is the best course, and I have succeeded several times under both conditions. If, however, there is doubtful possibility of control of infection we certainly can reduce the infective danger of a needle wound to a minimum. I have done probably fifty cases of linear extraction with about 60 per cent. good results. This included prolonged treatment, closing of the canaliculus, leaving eye open after operation, and cauterizing wound with crystals of carbolic acid.

DR. HERMAN KNAPP, NEW YORK—I performed the operation three or four times in 1860-3 because of suppuration in the other eye. The operations were failures by iridocyclitis and glaucoma. I do not consider it justifiable now. In your case I should cure the suppuration or extirpate sac. I never did a linear extraction in total cataracts except in children.

REPLIES OF THOSE WHO HAVE NOT DONE THE OPERATION, BUT WHO BELIEVE IT IS AT TIMES JUSTIFIABLE.

DR. H. GIFFORD, OMAHA—I consider it possibly justifiable in cases where one ey has been lost by hemorrhage and there is decided evidence of arteriosclerosis. In case of your patient, I should get the conjunctiva in the best possible condition and then do extraction, protecting the wound by a conjunctival flap previously dissected up and after the extraction brought down to cover at least one-third of the cornea. I consider that there is danger of glaucoma in couching, and have done extraction in two cases where the other eye had been lost by retinal hemorrhage, both with good results.

DR. H. B. CHANDLER, BOSTON—I have never seen a case, but can conceive of one, where the operation was justifiable. There are, however, the dangers of replacement of the lens, iridochoroiditis, glaucoma and hyalitis to be considered. In dacryocystitis I should remove the sac or operate after treating it, doing simple extraction with conjunctival flap, and stitch and buttonhole iris to prevent prolapse. Ninety per cent. of my cataract extractions show staphylococci before operation. I have done linear extraction in perhaps ten or twelve soft cataracts, with always satisfactory results.

DR. N. M. BLACK, MILWAUKEE, WIS.—I think it justifiable in the very old and weak, the insane, in the second eye where the first was lost by fluid vitreous and there is reason to believe this eye in the same condition, and occasionally in conditions as stated by you. In dacryocystitis I should tie off the punctum before operation and leave until wound healed, as Buller and Wood do; in purulent conjunctivitis of intractable nature, the method described by Ellett of covering cornea and corneal wound with the bulbar conjunctiva until the corneal wound is healed. I have done no linear extractions for such cases, but have seen Dr. C. A. Wood perform it in a case of dacryocystitis in which he ligated the puncti with perfect result.

DR. J. W. CHAMBERLIN, ST. PAUL, MINN.—It would be justifiable as a last resort when treatment of other conditions failed. I have operated on three or four cases where the patient was diabetic or had chronic inflammation of conjunctiva. One failure, one good result, one fair.

DR. E. JACKSON, DENVER—I should think it justifiable when the general health of the patient was so poor that the needed restrictions after extraction would cause serious risk, or where the prospect of early death makes later dangers from couching unimportant. In the case cited, I should improve the lacrimal and conjunctival condition as much as possible, perhaps ligate the canaliculi, make a thorough application of silver nitrate solution to conjunctiva for from twenty-four to thirty-six hours before operating, wash the conjunctiva very thoroughly with 1/1,000 trikresol solution, and do extraction with a section of the limbus and large conjunctival flap, close wound quickly and wash conjunctiva in twenty four hours.

DR. A. E. BULSON, FT. WAYNE, IND.—I should not hesitate to do the operation under the conditions mentioned. I think the operation has a limited field of usefulness even now, as I have had occasion to see several cases where the same effect has been brought about by trauma as would be produced by couching. One case obtained with lenses 20/30 vision, and has to my certain knowledge retained it for five years. In a case of dacryocystitis I should eradicate the sac and in conjunctivitis treat it until under control, or decline to operate.

DR. A. ALT, ST. LOUIS—I consider the operation justifiable in exceptional cases—for instance, in patients certain to die soon. I have operated several times where one eye has been lost by infection, with successful results.

DR. E. C. ELLETT, MEMPHIS, TENN.—I might couch, particularly in old and feeble persons, if the treatment or plan following could not be carried out, in such a case as you outline. In the case of an otherwise healthy person, if the infection was due to the tear sac, I should tie off the canaliculi before extraction. If the discharge was from the conjunctiva I should raise the conjunctiva all around the cornea, extract, sew the conjunctiva over the cornea, letting it remain five days. I have operated twice with perfect success in cases of purulent conjunctivitis (streptococcus and pneumococcus).

DR. A. R. BAKER, CLEVELAND, OHIO—Yes, justifiable in aged persons when circumstances are such that preliminary treatment could not be given. I have suggested the procedure in choroidal hemorrhage, but never tried it. In the case in question I formerly would have injected sac daily with nitrate of silver, but have recently used protargol until the purulent secretion disappears. I should extract with iridectomy and conjunctival flap, and bandage only from twelve to twenty-four hours, continuing the daily injections of protargol. I have operated on from fifteen to twenty cases of dacryocystitis, and all recovered without infection. Several of the cases were those declined by confrères. I once lost both eyes in an old lady with general anasarca, dilated heart and albumin in urine, but with no local or general infection that I could discover.

DR. O. F. WADSWORTH, BOSTON—The operation might possibly be justifiable if circumstances absolutely prevent preliminary treatment and the patient understands the doubtful result. I should treat such cases to eliminate the cause. This should be possible in conjunctivitis. If dacryocystitis, the lacrimal sac should be extirpated. I have done very few linear extractions in such cases, none since cocci were recognized. I recall one earlier treated successfully by daily syringing through nose before and after operation.

DR. W. K. ROGERS, COLUMBUS, OHIO—It might be done in some cases of insanity, and possible extreme senility. The loss of one eye by suppuration, however, would not justify me in advising couching, as the condition of infection is to be remedied. I have had several cases of both kinds, but have no cause to complain of results.

DR. A. B. HALE, CHICAGO—The operation may be justifiable. In infective cases I should extract through corneal wound and should be tempted to try Czermak's lately devised subconjunctival extraction. I have had three cases, with two eyes saved and one lost.

DR. N. L. WILSON, ELIZABETH, N. J.—It might be used as a last resort if the dacryocystitis or conjunctivitis could not be controlled. I should try closing the punctum, paint the conjunctiva with silver nitrate for a week or two, scrub conjunctiva thoroughly before extraction. I have had three cases, with two eyes saved and one lost.

DR. MYLES STANDISH, BOSTON—I can conceive of cases in very aged people where I might consider the operation of couching.

DR. HENRY GRADLE, CHICAGO—I should consider it justifiable only when patient's condition (imbecility, etc.) makes the success of extraction highly improbable.

DR. H. V WÜRDEMANN, MILWAUKEE, WIS.—Yes, justifiable sometimes in the insane or very old or feeble, whose expectation of life is short. I think the following procedures are sufficient to successfully combat conjunctival and lacrimal suppuration: Cure of nasal, conjunctival and lacrimal disease, including operations on duct, excision of sac, argyrol and silver compounds, occlusion of canaliculi by suture as advocated by Dr. Casey Wood, peritomy and covering cornea temporarily with conjunctiva, as advocated by Dr. Ellett. I have had three cases where the other eye was lost by operation, and about a dozen where the other eye was hopelessly blind from trauma or disease. In 1,000 cases, three have been lost by suppuration, in one only where infection already existed, and two by traumatisms inflicted by patients after operation.

DR. J. C. MCREYNOLDS, DALLAS, TEXAS—The operation is possibly justifiable, but not preferable. If it should prove impossible to remove the focus of infection either by treatment of the diseased structures or by excluding them from communication with the field of operation, I should then proceed in the following way: 1. Make your incision quite peripheral, so as to pass through tissues well supplied with blood vessels, and hence well nourished. 2. Make a conjunctival flap which will quickly unite with the opposing denuded surface, thus preventing the infection of the interior of the globe. 3. Instead of closing the eyes for a few days with a bandage, as in ordinary cases, treat the eye very carefully as a wound of the cornea or sclera by frequent irrigations with mild antiseptics and by constant applications of cold pieces of gauze or linen after the manner of treating a purulent conjunctivitis. I have repeatedly treated such cases without a bandage, and with very satisfactory results.

DR. JAMES M. BALL, ST. LOUIS—It is justifiable in those near death who wish to see again. In the case mentioned, I should treat conjunctivitis or excise lacrimal sac, and then do extraction with iridectomy. I do not believe in linear extraction.

DR. S. D. RISLEY, PHILADELPHIA—It might be done in very aged people, blind in both eyes from cataract, who had not long to live and when it would be dangerous to confine them to bed too long. I have seen, however, many cases where the lens has been dislocated by accident or couching with chronic or trophic choroiditis and tension. In case in question, I should treat conjunctivitis and tear passages for some time, sterilize as thoroughly as possible before operation, and extract lens with a large conjunctival flap, dust iodoform in retrotarsal fold below, and dress eye every twelve hours. I have had many cases where the danger of suppuration was recognized. I recall two where the eye was lost, one from suppurative iritis and the other from slow degenerative changes, probably uveitis. In both cases I felt that there was some relation between the conjunctival state and the ultimate loss of the eye, but these are the only two cases in which I have had to regret having operated on eyes with chronic lacrimal or conjunctival disease.

DR. H. M. STARKEY, CHICAGO—I have thought for several years that I might try couching, but have had no case in which it was required. I believe I should try it in your case mentioned. There comes to my mind only one case before attention was given to bacteriology in which linear extraction was done, a case of purulent dacryocystitis, in which the eye was lost.

DR. LUCIEN HOWE, BUFFALO, N. Y.—The operation is probably justifiable. In cases of infection I should cure or improve the dacryocystitis or ligate the canaliculi, and then extract.

DR. HIRAM WOODS, BALTIMORE—Yes, it is justifiable if such conditions exist as stated, and it is a question of blindness or taking what is apparently the smallest risk. I should try to get rid of the infection before operating, if possible. Couching should be considered if this seemed impossible. I have lost five eyes after cataract extraction by suppuration in certainly over two hundred extractions.

DR. J. A. LIPPINCOTT, PITTSBURG, PA.—I think the operation of couching might be justifiable on the second eye after loss of the first from choroidal hemorrhage. If persistent treatment failed to eliminate the danger of infection, I should seal the canaliculi and trust to White's ointment of the bichlorid. I should not dislocate. The number of times I have operated on the second eye after the first was lost from suppuration either in my own hands or those of one of my colleagues is very considerable, and the results quite satisfactory, but in all such cases I have spent months in preparatory treatment, directed to the tear ducts and to the nasal cavities.

THOSE WHO DO NOT BELIEVE THE OPERATION EVER JUSTIFIABLE.

DR. F. C. HOTZ, CHICAGO—I do not consider it justifiable, as clinical experience of the past has shown that sooner or later a slow cyclitis develops and causes blindness. I should extirpate the tear sac or treat the conjunctiva with protargol until the coccus infection is removed, and bandage the eye for only twenty-four hours to get the wound closed, then use only a protecting shield. I can not tell just how many cases I have had, but there has resulted no wound infection.

DR. T. Y. SUTPHEN, NEWARK, N. J.—It seems not justifiable, for, even if no suppuration follows, the result is far worse than after extraction, and I believe the danger of infection is just as great if not greater in puncture than in clean cut. The loss of the other eye after extraction would not deter me from making an operation on the other, but only after every effort to remedy the dacryocystitis or conjunctivitis, and the eye should be dressed more frequently after operation. I have operated on such cases, but do not remember losing an eye as a result.

DR. CHARLES S. BULL, NEW YORK—No, an opaque lens displaced in the vitreous is a foreign body, presses on the ciliary processes and may give rise to a cyclitis and loss of eye. If the infection is from conjunctivitis, treat until cured. If the lacrimal sac is inflamed, divide the canaliculi, open sac, cauterize and treat by injection until cured. If chronic dacryocystitis, dissect out sac.

DR. WILLIAM C. POSEY, PHILADELPHIA—It is unwarranted in the light of present knowledge, the dislocated lens giving rise to glaucoma or iridocyclitis. Remove the sac or obliterate the canaliculi before operating.

DR. CASEY A. WOOD, CHICAGO—I have never had a case where I considered it justifiable, owing to the certainty that sooner or later intraocular changes, especially secondary glaucoma, would set in. Other procedures are more likely to obtain useful vision. Where the infection is lacrimal or nasolacrimal, the lesions should be treated with the purpose of curing or relieving them. Then resort to the device advocated by Buller (mentioned in Norris and Oliver[23] by Knapp), which in his experience is effective in shutting off such sources of infection. Where bacterial toxin areas are mainly or entirely situated in the conjunctival sac and lids, these should be carefully looked after, not forgetting the general health, and the most rigid precautions (antiseptic) taken before, during and after operation, which ought to consist of preliminary iridectomy and subsequent extraction. I have done, within the past five years, extractions of this kind with happy results. The Buller method is practically adapted to cases of nasal or lacrimal infection where there is insufficient time allowed for the cure of the original disease. A bacteriologic examination of the conjunctival secretions and a test bandage should give negative results for at least two days before extraction is thought of.

DR. ADOLPH BARKAN, SAN FRANCISCO—In thirty two years I have never couched a cataract, and do not consider it justifiable. I have of late years made the regular extraction in such cases, guarding against wound infection by leaving the eye open after operation and keeping inner angle of eye well covered with iodoform xeroform after some treatment of the lacrimal duct. In five or six such operations no eye has been lost. The *modus operandi* is: Attending to lacrimal tract, probes, astringent injections (no closure of canal, which, in my opinion, produces draining of discharge under bandage). Even if an incomplete result is achieved in making lacrimal channel entirely permeable and aseptic, which is often the case, extract, do not bandage at all, patient keeping his eye closed, but winking occasionally; throw a good deal of xeroform or iodoform into inner angle, repeating application every two to three hours. I nearly always make a good conjunctival flap, and gener-

23. Norris and Oliver: System of Eye Dis., vol. iii, p. 794.

ally do simple extraction. I am not sure that in these cases the duct has always contained streptococci or staphylococci, but often.

DR. G. MELVILLE BLACK, DENVER—No, couching is never permanent in results, even if immediate danger is avoided. Extirpation of the lacrimal sac or other means can be used to make the extraction safe. I should do regular extraction, sliding conjunctiva over cornea, after method of Ellett.

DR. GEORGE H. PRICE, NASHVILLE, TENN.—No, it is not justifiable because the lens, acting as a foreign body, sets up inflammatory trouble which in all probability will result in ultimate loss of eye. The inflammatory condition should be treated until the infection is relieved, which should be accomplished in a reasonable time, and even if it should require considerable waiting it would, in my opinion, be the best line of treatment. I have had cases of not severe conjunctivitis in which results were good.

DR. OSCAR DODD, CHICAGO—Less dangerous means of getting rid of the lens can be used, as a large number of such operations terminate with loss of sight. Treat eye carefully until infection is gone. If necessary, eliminate lacrimal sac by cauterizing punctum or ligating as advised by Buller. Extract after preliminary iridectomy. I have never done linear extraction except in young people with a large nucleus to lens.

DR. G. C. SAVAGE, NASHVILLE, TENN.—No, the lens will act as a foreign body sooner or later. In infective cases treat and cure, if possible, the purulent inflammation and then extract. I have undertaken three or four of such cases with much dread, but successfully.

DR. STEPHEN C. AYRES, CINCINNATI—I do not consider it justifiable on account of danger from glaucoma. The chances of success are better with extraction after obliterating the tear sac, and, if necessary, removing the lacrimal gland.

DR. STEPHEN O. RICHEY, WASHINGTON, D. C.—I think not, as the lens remains as a foreign body in the eye, causing inflammatory action and not remaining anywhere long enough to become encapsulated. Conjunctivitis and dacryocystitis should be absolutely cured before the bulb is opened. Any other procedure invites misfortune.

DR. M. W. ZIMMERMAN, PHILADELPHIA—No, because the lens in the vitreous is a foreign body and a constant and greater danger than infection, which, at its worst, lasts but a few days. I should open and drain or seal the lacrimal nasal duct, treat the conjunctivitis, even use corneal suture and iodoform at time of operation. I have had several such cases. The two losses from infection of the wound were not the cases which before operation looked most dangerous.

DR. E. SWASEY, WORCESTER, MASS.—On general principles, no, as other and safer plans can be adopted to free the conjunctival sac from infectious secretions. Close the tear duct by suture and later, if necessary, remove the lacrimal gland. I had one case, an old man, in which a dirty lacrimal discharge, which had not been found at time of operation, developed under the bandage. The eye was lost by infection. I should first remove the blind eye before operating on the remaining one, as I feel sure that I lost one case from sympathetic inflammation by not doing so.

DR. H. W. RING, NEW HAVEN, CONN.—There are other methods more justifiable. By tying the punctum, dacryocystitis need have no terrors for a few days while the wound is firmly uniting. By closing the wound after extraction with conjunctiva until firm union occurs, the conjunctivitis is not likely to cause infection.

DR. JOHN E. WEEKS, NEW YORK—No, there are other methods which are safer. In infectious dacryocystitis I should advise excision of sac and in infectious conjunctivitis the correction of it by appropriate treatment. Operation after all discharge has ceased. I have operated in four cases of dacryocystitis after treatment, but without excision of the sac, and with satisfactory results. In one case without treatment the eye was lost. I have had good results in a number of cases of chronic conjunctivitis.

DR. JAMES THORINGTON, PHILADELPHIA—I do not believe it justifiable because of the danger of glaucoma, retinitis and degeneration of the vitreous. In a case of dacryocystitis, after preliminary treatment and thorough antisepsis I should operate with large conjunctival flap when making corneal section, dressing eye once or twice a day after operation. I have had three such cases, and good results in all. In none of these had the other eye been operated on.

DR. THOMAS R. POOLEY, NEW YORK—No, the operation is more dangerous than the risk of infection of the wound. I should obliterate or extirpate the sac if dacryocystitis were present; if not, do extraction with iridectomy under rigid antisepsis. I have done successful operations in six cases of dacryocystitis after obliteration and extirpation of the sac.

DR. LEARTUS CONNOR, DETROIT—No, because, 1, the eye is endangered by a foreign body, lens, in vitreous; 2, dacryocystitis and conjunctivitis can be cured and extraction rendered safe; 3, the eye would be endangered by the couching needle if the infection was in the conjunctival sac. Cure the conjunctivitis and dacryocystitis, and then extract lens. If haste was imperative, I might venture to occlude the canaliculi, remove the infection from the conjunctival sac and then extract lens. I recall five cases with good results.

DR. J. ELLIOT COLBURN, CHICAGO—No, the results of accidental luxation in patients over 40 years of age in my experience are uniformly unfavorable and terminate in intraocular disease. In case mentioned, remove the sac and treat conjunctivitis. I have four similar cases, one with poor vision, 20/80; two fair, 20/50, and one good, 20/20—1.

DR. B. BETTMANN, CHICAGO.—It is not justifiable in any circumstances. I should advise extraction and closure of lacrimal duct with cautery. I have had three cases, with good results.

DR. J. M. RAY, LOUISVILLE, KY.—No, because dislocated lens will sooner or later set up changes that are liable to cause destruction of the eye and call for enucleation. Dislocated lenses from injury show this. In dacryocystitis, excise sac and extract lens. In chronic conjunctivitis, get conjunctiva in best condition possible, then extract and leave off dressings as soon as possible. I have had several cases of dacryocystitis; one, in which the canaliculi were not obliterated, was lost.

DR. A. A. HUBBELL, BUFFALO, N. Y.—No, because any case deserving restoration of sight can be made amenable to extraction by suitable preliminary treatment, both local and general, and because couching leads to blindness sooner or later. I would cure the dacryocystitis or conjunctivitis as completely as possible, then do a preliminary iridectomy, and afterward extraction. I have done eight or ten, and every one successful (flap operation). I never do linear extraction.

DR. J. HERBERT CLAIBORNE, NEW YORK—No, not justifiable, since other measures properly carried out give good results. I should advise extirpation of sac and subsequently, after careful treatment of conjunctiva, do linear section.

DR. JOSEPH A. WHITE, RICHMOND, VA.—I have never done the operation, but have watched such cases in the hands of surgeons who preferred operating in this way to sending the case to a specialist, and in nearly every case I could watch to the end the eye has become irritable and lens had to be removed or eye lost. I have, however, seen a few exceptions to this rule. Should not consider it justifiable, as only in exceptional cases will the eye escape ultimate destruction. I should postpone operation until rid of the suppuration from the sac or conjunctiva when suppuration is present. I can not see what influence the loss of one eye from suppuration would have on an operation on the other if this was free from infection. I have operated on a number in which I had to control secretion before operating, but had no bad results in them.

DR. C. R. HOLMES, CINCINNATI—I do not believe it justifiable because of the liability to bring about serious disturbances of the eye at a later date, including glaucoma. My treatment of a case of suppuration of the tear sac would be its extirpation, including the lacrimal gland, prior to the operation, and, if purulent discharge from the lids, deferring the operation until such condition has been brought under control. I have extirpated the lacrimal sac in a woman of 84 years before extracting the cataract. I have not at hand the number of linear extractions, but they amount to several hundred, and so far as I can remember now have only lost two by suppuration, which occurred at the same time and in the same room in a dirty hospital, about ten years ago, where the nurse was an uneducated, half blind woman, and the infection was traced directly to a case of necrosis of the tibia which was being handled by the same nurse at the same time.

DR. CHARLES F. CLARK, COLUMBUS, OHIO—I could not bring myself to endorse such an operation without strong evidence of its safety. I have seen such disastrous results from dislocation of the lens. Should prefer to treat or remove lacrimal sac and later extract.

DR. GEORGE C. HARLAN, PHILADELPHIA—The immediate effect may be encouraging, but the ultimate is likely to be disastrous. In one case of a man of 52 years I had an excellent result by frequent careful needling, boring through center of lens. Twelve operations in the course of a year. Vision, 20/30.

DR. WILLIAM CHEATHAM, LOUISVILLE, KY.—I should fear couching, as I think a bead of vitreous would follow needle, rendering infection more certain. I fill the inner canthus with finely powdered iodoform after washing out sac well. Have had three cases and my assistant one. Good results in all, but I have lost cases where I failed to recognize the dacryocystitis.

DR. B. A. RANDALL, PHILADELPHIA—I recollect having couched a subluxated lens as a temporary expedient. This failed as a couching, but the lens was thereafter more easily extracted in capsule. Should not consider it justifiable in infection, as puncture is liable to destructive infection as an extraction wound. Treatment should be superficial in the effort to cure the infection before risking any cataract operation. I have several times lost cases where latent infection must have been present, unrevealed by conjunctival or lacrimal discharge.

DR. HERBERT HARLAN, BALTIMORE—Very doubtful if justifiable. I should try to cure the dacryocystitis, and get patient in best possible condition and do the linear extraction. I have done several with good results. I fear the result of extraction more in weak old people than in conjunctivitis or dacryocystitis if in good health.

DR. C. A. VEASEY, PHILADELPHIA—From a clinical study of several cases of complete dislocation of lens into the vitreous, it would seem a very doubtful procedure to place it there intentionally. I should treat for a long period the conjunctiva and lacrimal sac as well as the nares, close lacrimal punctum by cautery or suture if pus persisted, operate with large conjunctival flap and use cold compresses from the start. I have had probably half a dozen such cases.

DR. W. B. JOHNSON, PATERSON, N. J.—I should prefer not to do it. Have had about 200 cases, and the results were about equal to the usual percentage, vision ranging in acuity up to 95 per cent. or 96 per cent.

DR. HENRY B. YOUNG, BURLINGTON, IOWA—The operation would not be safer than closing punctum (either method) and not closing lids (open treatment). I have had two cases, both lost by suppuration, one twenty years ago and the other ten years ago. On the last, after treatment of the dacryocystitis, I made an iridectomy and got prompt healing without reaction.

DR. G. E. DE SCHWEINITZ, PHILADELPHIA—I had one case where the lens was accidentally dislocated into the vitreous while making capsulotomy in an unruly patient. Six months later V. with +10.0 =20/c, the eye having been perfectly quiet. Subsequently a capsule discission by another surgeon caused iridocyclitis and loss of

eye. I do not consider that I have had enough experience on which to base an opinion as to the justifiability of the operation. If dacryocystitis exists, excise the sac and close canaliculi; if conjunctivitis, I should think favorably of closing the wound with a stitch and keeping conjunctival sac filled with iodoform until healed. I have operated many times in marked chronic conjunctivitis or hyperemia, usually after preliminary iridectomy, but can not say what bacteriologic findings were in all cases. In two I knew staphylococci were present. Results were good in all cases.

DR. FRANK C. TODD, MINNEAPOLIS—In a case of incurable dacryocystitis extirpate the sac, or, if mild and canaliculi had not been slit, ligature of the canaliculi after cleansing. I operated on one case where the other eye had been lost by sepsis, and on a number of cases of dacryocystitis. The result in the first case was good, and no sepsis in the others.

DR. HOWARD F. HANSELL, PHILADELPHIA—I have had one case of infective trouble in which the result was good. The lower lid was everted and held by adhesive strips, enabling discharge to drain on cheek. The incision in the corneal limbus healed without interruption.

DR. H. G. MILLER, PROVIDENCE, R. I.—When a student in Paris, the operation of couching was frequently performed as a routine operation for cataract, especially by the general surgeon, with often good results.

DR. P. A. CALLAN, NEW YORK—I never had a case where couching was considered. I should destroy the sac, extirpate or tie the canaliculi, and treat the conjunctivitis, make corneal incision or Graefe modified linear. The former gives excellent results in suitable cases.

DR. D. ROY, ATLANTA, GA.—I have no case where the operation was considered. Obliterate the sac if necessary, give preliminary treatment, do preliminary iridectomy and later removal. Have had no case of just the character described.

Drs. William H. Carmalt, New Haven, Conn.; J. B. Emerson, New York; Frank Allport, Chicago; Harry Friedenwald, Baltimore; J. A. Stucky, Lexington, Ky.; B. Joy Jeffries, Boston, Mass., stated that they had not done the operation, but did not express opinion as to advisability.[24]

DISCUSSION.

DR. L. WEBSTER FOX, Philadelphia, said that he can not find it consistent with his teaching and practice to accept Dr. Rogers' views regarding reclination. Dr. Rogers, however, takes an impregnable position in stating that there are some conditions in which the operation is justifiable, and this stand is applicable to all ocular operations when we consider individual skill and experience as a large element to the success of any procedure. Dr. Fox rejects the operation of reclination under all circumstances, believing that the dangers of iritis, iridocyclitis and glaucoma more than counterbalance its better features. The various manifestations following the operation in Dr. Rogers' case would be sufficient, he thinks, to deter one from considering the operation even in the event of apparently incurable dacryocystitis and conjunctivitis, as the results in this case may be considered as the best that may be expected. Dr. Fox would prefer treating the lachrymal and conjunctival conditions over a much longer period and with less strong solutions; and, if still refractory to treatment, he would either ligate the sac or obliterate it and proceed to extraction of the cataractous lens. The technic he employs in all cataract operations is especially applicable under these circumstances. Two hours before the operation the skin around the eye to be operated on is carefully cleansed and eyepads saturated with a 1 to 2,000 solution of corrosive sublimate are placed over both eyes. As the infection is usually gross and not microscopic the conjunctival cul-de-sac is thoroughly irrigated with sterile boric acid solution by means of a pipette connected to a douche bottle by a piece of rubber tubing. Just before the operation a drop or two of a 1 to 2,000 corrosive sublimate solution should be instilled. The cocain should be fresh and the instruments made sterile by placing them in a solution of alcohol and distilled water in the proportion of 5 ounces to 32 ounces, as although the eye is usually very tolerant to considerable infection, the resistance may be greatly lessened by contributory negligence on the part of the operator. The question of the bacteriology in these cases is to Dr. Fox's mind of no practical moment, as it has been repeatedly shown that identical forms of ocular inflammation may be produced by dissimilar organisms, according to the character of the external influences. He said that he would hesitate to condemn those who practice reclination under the circumstances Dr. Rogers alludes to, as their experience and skill undoubtedly warrant its employment by them, but to the teaching of its acceptance as an alternate of extraction he is opposed.

DR. H. V. WÜRDEMANN, Milwaukee, declared that he is convinced that this operation is a live one, though it must be very rarely done. Theoretically he would reject two of the indications given by several recent writers on the subject and by Dr. Rogers, namely, chronic conjunctivitis and chronic suppuration of the lachrymal sac. Dr. Würdemann believes that we can sufficiently combat the infection in these cases, long enough at least to do a cataract extraction. He is more afraid of a puncture of the globe with a needle, or even a Graefe knife than of section of the cornea, because the vitreous is much more injured and more room is given for infection. In over a thousand cases applying for cataract operations he has only found one case in which he would do a reclination. The man was 68 years old, blind in both eyes for 32 years; eight years before nature had performed a partial reclination in one eye so that with a correcting lens he had good vision. A little over a month ago Dr. Würdemann did a reclination on the other eye, getting plus 6/12 vision. The patient remained in the hospital only one week. Of course, the patient was warned beforehand of the possible secondary consequences. Dr. Würdemann had never done the operation before except on pigs' eyes. He held the lens down for about five minutes, waiting to see if it would come up again. The patient is able to read and to get about.

DR. J. L. THOMPSON, Indianapolis, said that there is one class of cases in which nothing else will do; that is where there is fluid vitreous. He has had cases from excellent surgeons where one eye had been operated on and lost, and he knew that these surgeons knew how to do a perfect operation; then he made a preliminary iridectomy before operating for the extraction of the other cataract. Wherever there is any doubt at all, do a preliminary iridectomy. Then reclination may be performed if necessary. If Dr. Thompson were going to do a reclination he would certainly do a preliminary iridectomy first and at least six weeks before the couching.

DR. J. WALTER PARK, Harrisburg, Pa., mentioned a case in which he had intended to do a cataract extraction without iridectomy. After the usual incision he followed the Knapp method of lacerating the capsule and, whether due to carelessness on his part or to undue pressure in trying to get the lens out, instead of coming out it went down into the vitreous and a large bead of vitreous appeared. He at once closed the eye and watched it carefully. The case was some distance from his home, but he went to see the patient every other day. On the fourth day she complained of seeing "black spots," but that was all, and the eye did well. She made a good recovery and has been able to read up to within the last six months. Her vision is now commencing to grow dim and she is thinking of having the other eye operated on. Neither the family nor patient know that it was not an ordinary successful cataract extraction.

DR. S. D. RISLEY, Philadelphia, recalled the case of an aged negro, who came to the university some years ago. A famous Maryland surgeon was riding on horseback along a hot, dusty road in July, and met an old family servant painfully feeling his way along the road. The surgeon said, "Sam, what is the matter; can't you see your way?" He said, "Why, I'se blind, marster." "Well, let me see," said the surgeon. "Why, you have cataracts; let me take them off for you." Opening his

24. Other literature which may be consulted is as follows: Wilder, W. H.: Dislocation of the Lens, Chicago Med. Recorder, 1892, vol. iii, pp. 460-465. Theobald: Report of a lens totally dislocated into the vitreous and retention of useful vision, Tr. Am. Ophth. Soc., N. Y., 1881, vol. iii, p. 100. Wilson: Accidental Depression of an Opaque Lens, Ophth. Hosp. Rep., London, 1860-1862, vol. iii, p. 65. Noyes: Luxation der Linse in das Corpus Vitreum, Ber. a. d. Versammel d. Ophthal., Geselschaft, Stuttgart, 1884, xvi, 90-96. Higgins: Displaced Crystalline Lens Floating Freely in the Vitreous Chamber, London Lancet, 1892, vol. ii, p. 812. Martin, H.: On operations for cataract among the natives of India, Ophthal. Hosp. Rep., London, 1858, i, 161-168. Robertson, J. A.: Observations on Extractions and Displacement of Cataracts, Edinburgh M. & S. J., 1837, vol. xlvii, pp. 378-390. Fuch: Text-book of Ophth., p. 700. Schmidt-Rimpler: Augenheilkunde. Text-Book, p. 374.

saddle-bags, he took out his needle and reclined the lenses as the former servant turned his face upward in perfect confidence in his old master. The old servant, delighted with the result, expressed his gratitude, and master and man went their respective ways. Fifteen years later the aged and now decrepit negro came to Dr. Risley's clinic almost blind. The opaque lenses were bobbing about in a fluid vitreous which was full of opacities. When these subsided somewhat a study could be made of the fundus which showed one of those always remarkable pictures of atrophic choroiditis. Dr. Risley believes that this is what usually takes place from the presence of a reclined lens in the globe. He has seen it over and over again after dislocation of the lens as the result of accident. There is a slow choroiditis and gradual destruction of the eye through degenerative processes caused by the lens acting as a foreign body.

DR. F. T. ROGERS said that he appreciated as well as anyone the dangers from glaucoma and other secondary changes, but if called on to decide what is to be done for a man in this condition he is sure that nearly all would consider this operation seriously. He thinks that Dr. Risley's case of the old negro is not a good argument, because the man might have had a choroiditis before the operation and the immediate vision might not have been much better than when Dr. Risley saw him. The patient's statement can hardly be considered as accurate.

EYE STRAIN.

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The subject of eye strain, including the need for wearing glasses, has for some years been rapidly forcing itself into prominence and has assumed an importance far beyond any expectation. It is in no sense a fashion or fad, though there are many such in medicine. The eyes are, and have been in the past, the unsuspected cause of a great variety of nervous disturbances that were never understood and never satisfactorily explained. Modern methods of study, which have lately accomplished such wonders in all branches of science, when applied to the eye have brought order and truth out of what had been a tangle of theory, supposition and uncertainty. The eye has always been studied simply as a part of the body, under physiology; it needed to be studied as an optical instrument, under optics, a branch of science in which our knowledge is mathematically accurate. Strange to say, it has always been considered a satisfactory explanation, when eyes are painful, weary, dreading light or close work, to say that they are weak, and that the proper treatment is to rest and to avoid using them.

No organ of the body should fail to perform its own particular function or show difficulty in its performance unless something is out of order; the proper thing to do is not to give up its use, but to find the trouble, to correct it if possible, and to restore the organ to usefulness. Many people use their eyes almost constantly on fine, close work without a thought or a twinge of pain; they have normal eyes. Many others find more or less fatigue or trouble, even from very moderate work, and are compelled to give up the use of their eyes, even though they may see well. These people have abnormal, imperfect eyes, even though they have good, clear vision. It is not, therefore, the amount of work done that causes the pain and fatigue, it is the kind of eyes with which the work is done.

The value and usefulness of every optical instrument is well known to depend primarily on the exactness of shape of the lenses and on the accuracy of their position; and every instrument, though built to be correct for general use, has to have some means of adjustment, to focus or to adapt it to the varying conditions of light and distance. The eye is a camera, with its lens inside; the pupil the stop, or diaphragm; the eyelids the shutter; but instead of a plate or film to take each picture, it has the retina, or expanded optic nerve, ever ready to feel and to convey to the brain countless pictures in constant succession. It also has its adjusting power; not a screw nor a draw tube, but the delicate ciliary muscle, which acts on the lens and changes the focus according to the nearness of the object looked at, but which is not needed for distant vision. Being an optical instrument, the eye can not escape the fixed law of optics, the necessity for extreme accuracy in the original shape and position of its parts.

We know that all parts and organs of every living body vary much in size and shape and that many differ greatly from what is known to be the typical or perfect shape. Unfortunately, the eye is no exception. Since instruments have been invented to make accurate measurements, it has been found that the eye varies as much as everything else. Each person is born with his own pair of eyes; sometimes they are correct, oftener not so; often they are not alike and can not work together properly. If the eyes are not optically correct they are made correct so far as possible by using the ciliary muscles. The baby rapidly learns to do this, and grows up seeing very well because he works and corrects his errors. Since the errors are always there, however, and must always be corrected before he gets any clear vision, he is compelled to keep his muscles at work all the time if he wishes to see clearly. Though muscles are made for work and grow strong and healthy from it, rest in proper quantities and at frequent intervals is equally essential to their health and strength. Muscles tire if kept at work too long, and the more tired they become the greater the amount of nervous force required to keep them at work, and the sooner they become exhausted. The normal eye rests when looking at a distance, but eyes of faulty shape have their errors to correct even in distant vision; so they get no rest anywhere. It is not, therefore, the reading, writing or sewing (which is proper work for good eyes) that is responsible for the fatigue and eye strain; it is being compelled to do this work with imperfect eyes.

If variations in eyes are so common, and constant strain is present in so many people, why do they not all break down and show serious trouble? Because there are secondary influences that also have to be considered. First, muscles tire much more quickly with hard work than with slight work; one can carry ten pounds much longer without fatigue than a hundred. It is a law of optics that the work required of the adjusting power increases very rapidly as the object we look at comes nearer. A certain amount of effort of the ciliary muscles is necessary to adjust the eyes if an object twenty-five feet away is moved twenty feet nearer. It requires just as much increase of effort if an object three feet away is brought one foot nearer, or if an object one foot away is brought one inch nearer. It depends, therefore, very much on whether the owner of the faulty eyes is occupied chiefly in looking at objects several feet away, involving very slight effort, or whether he is reading, drawing or writing. Second, it depends greatly on the nervous system that has to supply the energy to the muscles. If the health is perfect and the supply of nerve power abundant the amount needed for the necessary correction of errors may not be felt for a

long time, perhaps it may never be noticed; but if the nervous system is not strong or if any other conditions arise which draw heavily on the available supply of nervous energy, illness, worry, overwork, anxiety, over-excitement, then the little errors may prove a heavy burden. With a good income, little expenses may be disregarded; but with a small one they become of serious importance.

To this extent only, eye strain is conditional on the general health and constitution, and on the high tension of modern life; but the cause once there is always there, a fixed tax on one's powers, ready to grow into a burden at any time. It is not difficult, therefore, to understand that the demand for clear vision all the time, and near vision most of the time, may cause severe strain on imperfectly shaped eyes. It is not quite so easy to realize that with keen vision and free use of it, without any eye symptoms, eye strain may be responsible for results, which appear far off, in some other place. But since we insist on having clear vision all the time, we are obliged to borrow the extra nerve power from elsewhere; and, while the sight may be all right, some other place suffers. It is found to be an actual fact that eye strain is often the principal factor producing nervous debility, hysteria, melancholia, vertigo, nausea, insomnia, nervous dyspepsia, palpitation, general nervousness, irritability, faintness, weariness, headaches, constipation, and dozens of other annoying conditions. Eye strain is not a temporary condition due to some recent extra eye work, though that may be the occasion that brings it into notice.

Eye strain is a permanent waste of nervous energy in correcting the slight congenital and permanent errors in the shape of the eyes. This waste is not felt by a strong, healthy system, but is ready to become a decided tax whenever the system gets below par, and its effects are intensified immensely by continued close work.

When once the muscles have been taxed to the point of exhaustion, and nervous reflexes or disturbances set up elsewhere, then any effort to force the eyes to continue their work may cause actual physical damage requiring a long time to repair. It is like the breakdown that comes from overwork in any other way, repair is slow and sometimes never perfect.

Generally, the first effects of eye strain draw no attention to the eyes, for it may not affect the vision and very often does not interfere with the use of the eyes, but it fatigues and taxes the nervous system and compels one to pay dearly for it in some other way. The great misfortune is that it is not usually discovered, nor even looked for, until the trouble is well established. All grades of disturbances may result from eye strain, from the slightest smarting or weariness of the eyes after close work to confirmed invalidism. It may show itself in the youngest child, as irritability or nervous excitability, or it may not appear till the burden of old age forces it into notice and uncovers the cause of many an unexplained fret and disability. It may be an unsuspected factor aggravating and intensifying some other weak spot or ailment, and may take different forms at different times; it may excite a weak heart, dull the mental powers, or put the whole system out of balance.

Now that the cause of eye strain is known, we have the choice of two methods of relief: we may remove the conditions that make it a burden, or we may correct, but not remove, the cause. We can stop using the eyes for reading and for all kinds of near-work; stop doing the things which have been using up our energy, and then the tired muscles will slowly recruit and be able to get on very well, so long as the eyes are used very moderately. This method gives relief, but at the cost of permanently giving up near-vision to a great extent. On the other hand, we can search out and measure the errors in shape and by using correcting glasses, obtain relief, so long as we submit to their use, sufficiently to avoid the accumulation of fatigue.

Both these methods are very unpleasant. One does not wish to give up near-work; it is always a pleasure, usually a necessity. One does not wish to wear glasses most of the time, they are an annoyance and a cross; and yet there is really no other way, except to bear the strain and its increasing results—one never gets a new pair of eyes. This, then, is the second, very unpalatable fact: there is no way to prevent the bad effects of eye strain that is not unpleasant, and, since the cause is permanent, the prospect is very discouraging.

Theoretically, glasses should be worn constantly, since the errors are fixed, but if the eyes can once learn how to rest, they are usually able to bear their overwork a fair share of the time without bad results; but they must have rest, and at frequent intervals. The dislike to wearing glasses is so great and universal, the reason for wearing them so little understood, and the temptation to the oculist to avoid forcing such an unpleasant remedy on his patients is so strong, that they have been worn generally, for close work only, or for temporary relief, and as little as possible. Wearing glasses for near-work simply, makes that work as easy for imperfect eyes as it is for good eyes without glasses. But good eyes, having done their work, look off at a distance and rest; imperfect eyes can not look off and rest unless they keep the correcting glasses on; and rest is the most important thing. Rested eyes are able and willing to work hard; weary eyes that are not permitted nor taught to rest are unfit for work. This is the reason why so many people get such unsatisfactory results from wearing glasses; they wear them to aid them on their hard work, but fail to wear them so as to get any rest.

The third unpleasant point is that if glasses are needed at all they are really more beneficial when worn for resting or distant vision than for close work; but that is exactly opposite to what people wish to do or find agreeable. Too many people decide to follow their own inclination, but are sure to find later that the cost of so doing is much greater than they had expected. Much study and experimenting, with the aid of skilled workmen, have succeeded in producing instruments and methods wonderfully accurate for measuring optical defects in the eye or elsewhere. With these, it seems as if the oculist ought to find it an easy matter to immediately correct the slight variations in the eyes, which may be the source of so much annoyance and nervous wear and tear, if patients would consent to wear the hated glasses.

Experience has brought out another troublesome fact that till recently baffled investigation and thwarted the best endeavors of the oculist and the expectations of those who looked for relief. It has long been realized that the eyes seem to vary very much and change as time goes on; that different observers, or the same observer, get different measurements at different times. Mydriatics have been used to paralyze the muscles, but it has been found that the eyes will generally refuse to accept as much correction as seems to be needed under

such examination; and only temporary relief is obtained from the correction they accept. Confusion results and confidence in oculists' measurements and opinions, naturally, is much shaken. But carefully kept records, following cases for years, and study of final successes, have brought out clearly the reason for all this. The fault is not with the instruments, the oculist nor the patient; it is the life-long habit of the ciliary muscle that prevents it from fully relaxing and exposing the whole error. It can not relax fully, because it is not under the control of the will; it acts automatically, from a habit, too strong to be given up all at once. It must be remembered that the child was born with its errors, and in every act of vision, during every waking hour, he has been obliged to use this muscle to get clear vision; he never saw without making an effort, and it has become as natural to make this effort, if he opens his eyes, as to speak his own language if he talks. So, when a child or a man is asked in the oculist's office to open his eyes and see small letters without correcting his errors, as he always has done, he is asked to do an impossible thing. He simply can not. He does relax partially, but he can not let go and rest. The error is measured by the instruments, just as far as he relaxes and lets it out; but they can not measure the part he still, involuntarily, continues to correct. It follows, therefore, that glasses have to be changed from time to time as fast as the patient learns to relax. No one can accept the correction of the whole error at once, for old habits can not be given up suddenly. Nor do the eyes accept full correction willingly, for they are so much more familiar with their own way.

It is, of course, the first and natural thought of every one (oculists also, till they learn by experience to the contrary) that the glasses which give the sharpest, clearest vision, and which can be worn immediately, without annoyance, are the proper ones. But such glasses must always permit the ciliary muscle to retain part, at least, of the old habit. The muscles can not give up their habit suddenly or easily; they have to be urged, against their will, to learn to rest. Of course, the patient naturally objects to wearing glasses much if he thinks he can get on without, or to be hurried out of his old familiar way; he prefers to relax a little at a time, and to retain clear, sharp vision everywhere. And, of course, it is much easier, perhaps more profitable for the oculist, to yield to the patient's earnest desire, and let him wear the glasses but little and make them weak enough to please him. This way usually involves many examinations, and slight changes of glasses, perhaps spread over many years and give, meanwhile, only partial relief. Rest and ease can not come without the use of glasses for distant vision, nor until relaxation of the tired-out muscles is complete. If decided, speedy and permanent comfort and ease in the use of one's eyes are desired, it is the duty of the oculist to urge the patient to accept as much correction as he can, not what he likes, and to learn, by much practice, to relax completely and as soon as possible. What reason or sense is there in correcting only a part of a known error and leaving the rest to keep up the strain. One does not rest a weary, uplifted arm by dropping it a little or a good part of the way; it is the letting go that gives ease; once rested, the muscles are ready to work again. We judge of a surgeon or a dentist by the thoroughness and permanence of his work. Why not judge an oculist in the same way? The work is not done till the eyes are taught to rest. The prevailing idea, that to use glasses too much, or to wear glasses seemingly overstrong, weakens and impairs the natural power of the eye, is a mistaken one. It is perfectly true that the eyes ought to do their own proper work themselves without assistance; just as it is true that a man should use all his muscles freely and even work hard with them, for he would be better and healthier for it. But it is not true that he is strengthened by using them all the time without any rest. Glasses which correct the optical imperfections of the eyes, when worn all the time, simply remove the abnormal tax on the muscles, resulting from the imperfect shape of the eyes, remove the constant strain, render the eyes normal and give them a fair chance to work and rest, just as much and under the same conditions as do perfect eyes. The glasses do not do a bit of the work the eyes ought to do; they simply correct imperfections, oil the machine, remove unnecessary friction and prevent waste of power. If, by chance, we should put on a little too much oil, no harm is done, the machine is not injured, no power is lost. It is vastly safer for the welfare of the eyes to err on the side of giving a trifle too much aid rather than leave them compelled to work a trifle, with no chance of ever resting. So, contrary to the general idea, sharp, clear sight, so highly prized and the boast of many, is not the proof or the test of a good eye; for many who have the keenest vision can not use their eyes much or with any comfort.

Easy vision—vision that can be used and enjoyed freely, without thought or fatigue—is the proper test of a good eye. The normal and the imperfect eye may see equally well; the imperfect eye may actually see the better; but one can be used with no consciousness but pleasure; the other wearies and has to be carefully guarded from bright light and from overuse, and may make its owner conscious of a lack of nerve power somewhere most of the time.

When the fact is realized that congenital and natural variations in the shape of the eyes are the cause, not only of so-called weak eyes, but a very large part of the nervous frets and weaknesses which mar the ease and comfort of so many lives, it will be considered wise to hunt for errors in the child. None can be found if they do not exist, nor can strain on the nervous system be avoided, if they do exist, by leaving them uncorrected. The child, who begins early, has no strong habits to break, easily learns to accept full correction, and by wearing glasses a few hours a day, at home in the house, keeps out of all trouble, and is not confined to the glasses, for he never gets exhausted and knows how to rest if he is tired; yet he should never discard them entirely, for his errors remain as long as his eyes do.

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SOME FALLACIES IN THE AGGLUTINATION TESTS;

A PLEA FOR THE EMPLOYMENT OF A MORE UNIFORM TECHNIC.

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The increased attention which has of late been extended to the serum agglutination of bacteria has brought into prominence certain fallacies which arise in the experimenter's hands, and which must have been noted, to a greater or less extent, by everyone working in this subject.

The literature which has now accumulated dealing with the agglutination of the typho-coli group alone is nigh unlimited, and many of the reports are so at variance with each other that we are landed in a hopeless confusion when we strive to draw the true inferences from them. Some have held that the agglutinins produced by each organism are specific, while a host of others have denied this and have pointed out that they are only special for closely allied groups of organisms. Others, again, have demonstrated that this agglutination reaction is not necessarily a vital one. but is also exhibited in inert substances in a fluid medium. This latter phenomenon, Sir Lauder Brunton[1] and Norris demonstrated by the use of bits of soaped cork floating on water which had been faintly acidulated. Hence, in recent years, one would almost be led to believe that the Gruber-Widal reaction, which was to become the only absolute test in differentiating various infections and to group the different organisms into their respective classes, must be overthrown.

Much of this confusion has been due to the different methods employed in the technic; in fact, there are almost as many methods as there are workers in the subject. In such delicate tests as are required for the agglutination reaction, our present methods, though much advanced through the experiences of eight years of research, are still very crude, so much so, in fact, that many personal errors, including technic, are only eliminated with difficulty. It was a similar state of confusion which led American bacteriologists to adopt a standard method of procedure in determining the biologic characters of bacteria.

Quite recently, Nicolle[2] has emphasized the necessity of the various workers employing a uniform technic. It is the first essential if we wish to obtain some comparable reports and results of agglutinins, to adopt common methods, not only in the instruments we use, but also in the treatment of the animals and cultures we employ. The fact that one observer obtains agglutination of an organism, even in a stated dilution of his serum, neither tells us the susceptibility of his organism nor the potency of his serum; all depends on the age of the culture, the medium in which the agglutination has been carried on, the temperature of incubation, the reaction of the medium and many other points which will be discussed in turn.

AGE OF CULTURE.

The term "age of culture" may mean one of two things—either the length of time that a given culture has been growing in or on one particular mass of medium, or the time that the organism has been isolated from the animal body or from its natural habitat in water and transferred to artificial media. Here we refer to the latter.

That environment plays a great part in modifying the characters of an organism is well seen in the following: Rodet, and Nicolle and Trenel[3] found that the *B. typhosus*, isolated from typhoid patients, would agglutinate with great difficulty unless it had been retained on artificial media for some months. Bail[4] observed this same difficulty in agglutinating organisms isolated from water, but that this difficulty could be partially overcome by heating the organisms to 60 C. Wyatt Johnston[5] pointed out in 1897 that the power to agglutinate varied widely with different cultures of the same organism more especially, he said, with the degree in virulence. The relationship of agglutination to virulence seems to be only one of activity of the organism. Thus a strain which is frequently transferred to fresh media, and hence culturally becoming more active with increase in its virulence, is found to be more sensitive to agglutination.

I found the same difficulty as Rodet and Bail in agglutinating newly isolated strains of the *B. typhosus*. A laboratory stock culture of *B. typhosus* which had been on an agar medium for over ten months was grown in a flask containing 400 c.c. of water and 50 c.c. of neutral bouillon. Another strain of *B. typhosus* recently obtained from the spleen of a patient, was taken from the first transfer on agar and inoculated into a similar mixture of broth and water. Both strains, incubated at 37 C. for eighteen hours, were tested against an alien typhoid-immune serum (rabbit).

DILUTION OF TYPHOID IMMUNE SERUM.

	I-60	I-120	I-310	I-620	I-930	I-1240	I-2480
Old laboratory stock.	++	+	±	0	0	0	0
Recent strain.	++	+	±	+	+	+	+

In the table the following signs are used: ++ to indicate strong agglutination. + to indicate fair, but not intense and rapid. ± to indicate partial.

Evidently strains of *B. typhosus* newly isolated from the animal body have a diminished affinity for agglutinins. It would seem that the agglutinin receptors of the micro-organisms are already satisfied or partially satisfied by the agglutinins obtained from the reaction of the tissues of the recent host. That an organism once agglutinated, whether *in vitro* or *in vivo*, retains the inability to unite with the agglutinin haptophores, is borne out in all the experiments; and hence in testing the potency of a serum we must be careful in selecting our test organism.

The growth of the old laboratory stock strain in the flask was quite different from that of the recently acquired strain. The former showed a medium equally clouded throughout; the latter, though the medium showed similar cloudiness, also showed a fine granular layer at the bottom of the flask which consisted of pseudo-clumps. These clumps, microscopically, did not differ from true clumping except that, in the medium about them, there were still actively motile organisms. The lower limit of the dilution, obtained in the strain recently isolated, has been our experience in all such tests; and this, too, is the case when the organism has been isolated from the blood or feces of a patient. Different strains of *B. typhosus* do not agglutinate uniformly until grown for at least six months on agar. Up to this time they increase in susceptibility to the agglutinins. This latter point opens up a question: Can we distinguish, by the avidity with which an organism, isolated from water, becomes agglutinated, how long that organism has dwelt outside the animal body? The clearing up of this point would give the absolute value of finding *B. coli communis* in drinking water as establishing its source from recent contamination.

MEDIUM IN WHICH AGGLUTINATION IS CARRIED ON.

All living cells are influenced, more or less, by the

1. Lauder Brunton: Jour. Path. and Bact., 1901, vol. vii, p. 53.
2. Nicolle: Annal. de l'Institute Pasteur, 1904, vol. xviii, p. 209.
3. Nicolle and Trenel: Annal. de l'Institute Pasteur, 1902, vol. xvi, p. 562.
4. Archiv f. Hygiene, 1902, vol. xlii, p. 307.
5. Wyatt Johnston: Trans. Amer. Pub. Health Assn., 1897.

medium in which they are grown; either by its affecting their morphologic characters or perverting their secretions. Now, the agglutination process depends on a chemical or at least on a physicochemical reaction. This reaction must, of necessity, vary according to the nature of the secretions. The agglutinable substance produced by the micro-organism must take the form of an excretion which, along with other products, is modified by the medium in which the micro-organism is grown. The whole question of whether or not a microbe agglutinates well with its homologous serum (granting that the serum is potent) depends on the quantity of agglutinable substance it has produced or can produce. This frequently depends on the method of culture employed. Some prefer growing the micro-organism in a plain neutral broth to which an active serum is then added. Others use specially prepared media, as in our own[6] case, where a weak broth is used so as to dilute the albumins and proteids in the medium as much as possible without affecting the growth of the organism. Our dilute broth was made up of 450 c.c. of water, to which 50 c.c. of beef broth (as described by the Committee of American Bacteriologists) was added. We thus obtained a uniformly cloudy medium which was always of the same opacity after eighteen hours' incubation. Others, again, prefer to grow the microbe on agar, from which an emulsion is then made in water or in sterile salt solution, equal to the opalescence of a given solution. This will be referred to later.

In 1901 Savage pointed out that a spontaneous clumping occurred in certain of his strains of *B. typhosus*, but always in a broth medium. The clumping appeared mostly in cultures several days old, but it was also seen in twenty-four-hour growths. No modification in a medium could be found which prevented its occurrence or modified its appearance. Such a spontaneous agglutination was never noted by us in using the dilute broth medium.

A year-old laboratory culture of *B. typhosus* was grown in our weak broth medium, and another transfer made from the same strain into an artificial broth medium as used in the laboratory, made from Liebig's meat extract, using 3 grams of the extract, 10 grams of Witte's peptone and 5 grams of salt to 1,000 c.c. of water. Both were under the same conditions of temperature, time and reaction. After eighteen hours' incubation, each was tested against a common immune serum. It was found that the clumping in the weak broth appeared sooner, but, at the end of two hours, the reaction in it was not so nearly marked as in the stronger broth used. In seeking an explanation it was found that the filtrate of the more concentrated medium gave a precipitate with the serum, while the weak medium did not react. This brings up another point—that of peptone precipitants present in artificially produced sera due to inoculating peptone cultures into the experimental animal. We know that various proteids inoculated into the animal body will call forth the reaction of an antibody, which antibody, in the presence of the substance injected will cause a precipitation. With the latter view of Wassermann, that agglutinins and precipitins are identical in character, this would mean that the agglutinable substance within the body of the organism will, under favorable conditions, be extruded into the surrounding medium, and will exist in it as free bodies ready to be acted on by the agglutinins. Now, in carrying out experiments regarding agglutination, it is of great import to concentrate the agglutinable substances within the body of the microbe and to have as little free in the medium as possible. That the free precipitating body in the medium is identical with the agglutinable substance, is not proven as yet, but true it is that frequent washing of an organism relieves it of the power to agglutinate when acted on by an active serum.

The reaction of the medium in which the microbe is grown also plays a part in the sensitiveness of the microbe to agglutinins. I have found that *B. typhosus* is most sensitive when grown on media neutral or faintly acid, +2.0 N/10 to phenolphthalein.

Further, Bordet[7] points out that agglutination takes place much more actively in emulsions of the organism made in normal salt solutions, than in emulsions made in sterile water without the presence of salt.

TEMPERATURE OF INCUBATION.

Cultures obtained from the same stock and inoculated into weak broth media, but placed at different temperatures of incubation, are found to show a different power of agglutination. *B. typhosus* will grow well at 37 and 42 C. This organism grown at these temperatures shows a more active agglutination reaction in the cultures grown at 37 C. At this temperature well-marked agglutination was obtained at a dilution of 1 in 4,960, while only a faint agglutination resulted with the same serum in a dilution of 1 in 2,480, in the colony grown at 42 C. Whether there are more or less products excreted by the organism at one temperature than at another, which have an influence on the agglutinative reaction, or whether there is a difference in the number of organisms present in the medium, or both, I am not prepared to say.

Under this same heading I would also note another interesting phenomenon in the technic of agglutination. If a culture of the dilute broth be taken directly from the incubator at 37 C. and placed in the cold, the typical agglutination flocculi will result. This can be demonstrated very prettily by growing the *B. typhosus* in long tubes, such as described by Adami and Chopin[8] for macroscopic agglutination tests. After incubating eighteen hours place the tube in ice water. Within twenty minutes very decided flakes will be seen adhering to the sides of the tube which, in the course of several hours, will be precipitated in flocculent masses. The carrying of these tubes from an incubator at 37 C. to a cool laboratory at 17 or 18 C., is often sufficient to chill the culture and produce the pseudo-clumping.

NUMBER OF ORGANISMS PRESENT IN TEST EMULSIONS.

In our present belief that an immune serum contains agglutinins which are limited in amount or number for such serum, we can conceive that there must be an equally limited number of receptors which will exactly neutralize that serum. It matters not whether we consider agglutination as a chemical or a physico-chemical reaction. Should these receptors be too few in number, there being too few organisms in the medium acted on by the serum, there will be a definite amount of agglutinin, which is still potent, unsatisfied. This is somewhat similar to the observations of Castellani, who found that, in sera containing several varieties of agglutinins, he could satisfy and remove one without af-

6. My remarks apply to the methods in use at McGill University, Montreal.

7. Bordet: Annal. de l'Institute Pasteur, 1899, vol. xiii, p. 225.

8. Adami and Chopin: Jour. Med. Research, 1904, vol. ii, p. 469

fecting the other. Thus from a serum which agglutinated both the *B. typhosus* and *B. coli communis,* he could remove the agglutinins for either one by subjecting the serum to the respective organisms and still leaving the agglutinin for the other unaffected.

Again, if a medium contain so many organisms that the receptors are more numerous than the agglutinative haptophores of the serum, the total amount of the receptors will be unsatisfied by this serum with a consequent imperfect agglutination reaction. Thus it is impossible to compare the agglutinability of two strains of the same organism unless the condition as to the number of receptors—or, in other words, the number of bacteria—is the same. To obtain a medium having a standard number of organisms, Sacquépée and, later, Nicolle, used as indicators of opacity, suspensions of silver chlorid and lead carbonate, respectively, which were made with a definite formula. Emulsions of bacteria, either in broth or normal salt solution, were then made to the same degree of turbidity which represented the amount of opalescence in an eighteen-hour culture. We found that, by growing the organism in a large amount of medium—500 c.c. of weak broth—from a relatively small mass inoculated (three platinum loop fulls), that the degree of turbidity varied in imperceptible limits. When the food supply is in such relatively large quantities to the number of organisms inoculated in it, the growth, in the first eighteen hours, is constant.

A control emulsion of silver chlorid was prepared equal to the turbidity of one of the flasks, and this was compared with that of the succeeding cultures. When the time of incubation was kept constant, the opalescence of the growth did not vary in the different flasks.

MEDIUM USED IN INOCULATION OF ANIMALS.

Another process which leads to discrepancies in the agglutination test is the diluent used in the inoculation of animals for serum production. It has been frequently shown that the inoculation of proteids from different sources sets up in the animal the production of an anti-body in the form of a precipitin. Under these proteid bodies come also peptone and meat extracts. The injection of these substances calls forth precipitins special for each, and, if the sera from the inoculated animals are added to proteid solutions similar to those inoculated, we obtain the deposition of flocculent masses—the precipitate. Now, in inoculating animals with broth cultures, we set up a series of reactions— the formation of agglutinins for the microorganism and a special precipitin or precipitins for the proteid elements in the medium. The serum thus obtained, when tested against another broth culture, will show a distinct macroscopic reaction, whether the specific organism be present or no, the organism being mechanically carried down with the precipitate formed and appearing to afford in all respects a typical agglutination reaction.

To obviate the confusion arising from agglutinins and precipitins, the organism must be grown on solid media from which it is then removed with the platinum loop and emulsified in sterile water, or better, a normal salt solution. This emulsion, when inoculated, will produce no precipitins in the blood serum.

AGGLUTINATION REACTION DUE TO OTHER THAN SPECIAL SERA.

Agglutination following the addition of small dilute quantities of certain chemicals, has an interest beyond the mere experimental one. Such chemicals are used, not infrequently in disinfecting our reagent glasses, and also as preservatives for agglutinative sera. Among the reagents which, when added to a sensitive culture, produce the typical agglutination reaction, are mineral and organic acids, perchlorid of iron, calcium chlorid, mercury bichlorid, safranin, vesuvin and sodium sulphid; strong solutions of formalin will also cause the agglutination. Carbolic acid solution and chloroform are without effect, and hence can be safely used as antiseptics in preserving immune sera.

Blachstein,[9] working on the supposition that agglutination was a purely chemical phenomenon, concluded that there must be substances which will act equally specifically as the active sera against the homologous organism. Such a substance he found in chrysoidin which, in weak dilutions, has specific agglutinating reaction against the vibrio of cholera. Later it was shown that dilutions of chrysoidin would also agglutinate the vibrio of Finkler-Prior, though not in so high dilutions as was obtained with the cholera organism.

The dried blood test, which was instituted by Wyatt Johnston,[5] has its many advantages to the practitioner, but care must be taken in the selection of the paper on which the blood is collected. Testing a series of papers containing no blood, I found that the microscopic clumping could be obtained with some by using as an agglutinin a drop of water which has been in contact with the paper for some minutes. All papers do not act thus, but those which have an exceptionally glossy finish, as the cheap note paper, and leave a dull area where the water has been in contact, give a clumping of the organism.

Blotting paper, such as is used in the Talqvist hemoglobinometer, serves very well to collect suspected blood, and does not introduce any foreign clumping agent in the test. The blood stains are cut out and soaked in a watch glass with normal salt solution. The solution then represents our blood serum to be used.

Wesbrook[10] has devised a method which Wilson has put into practical use for making accurate dilutions of dried blood specimens, which the ordinary blood collection on paper does not allow. He provides the physician with a small sheet of aluminum foil on which the blood drops of a suspected typhoid patient are collected and allowed to dry. In this way the blood of a suspected typhoid case is sent to the laboratory where the dried blood is carefully shelled off of the foil and weighed. From numerous experiments he found that 0.001 gm. of the dried blood was equal to 0.004 gm. of the fresh blood. The weighed dried blood is then mixed with a sufficient amount of sterile normal salt solution to make a dilution of one in fifty or more. As Wesbrook has pointed out, the main difficulty in using this method is the weighing of the blood specimen. A little practice obviates this difficulty.

MACROSCOPIC VS. MICROSCOPIC METHOD OF EXAMINATION

Each method has its advantages and disadvantages, and each observer has his own reasons for choosing the one or the other. In testing strains of organisms against different sera, we have, at this laboratory, given preference to the macroscopic technic. By carrying out the technic recently described by Adami and Chopin,

9. Blachstein: Contribution to Science, Johns Hopkins Univ., 1900, p. 891.

10. Wesbrook and Wilson: Philadelphia Med. Jour., 1898, vol. i, p. 549.

the observer is relieved, to a great extent, of the fatigue in using the microscope, and, further, he can compare all his dilutions at a glance, gaining a much more exact picture of the potency of the serum and the sensitiveness of the organism. Much finer grades of dilution can be arrived at by using these large quantities of bacterial emulsion than is possible, even with the use of the mixing pipette of the hemocytometer, in the hanging-drop preparation.

SUMMARY.

Without entering into the discussion as to the chemical or physico-chemical nature of agglutination and the bearing this has on the differences in the agglutination reaction, and vice versa, I wish to point out that in carrying out these tests we require a greater uniformity in the technic to allow comparisons of the results obtained by different observers.

The susceptibility of an organism to agglutinins increases for the first six months from the time it has been isolated from the animal body and grown on artificial media.

Inoculations of animals with broth culture will produce in their sera, beside the agglutinins, precipitins whose reaction in broth culture can not be distinguished from true agglutination, as the organisms are mechanically deposited in the precipitate.

Pseudo-clumping may be obtained by using emulsions of bacteria in undiluted broth and testing against the above serum.

The agglutination of a micro-organism varies with the medium in which it is grown, the reaction of that medium, the temperature of incubation, and the number of organisms present in the emulsion.

Pseudo-clumping may be produced by sudden changes in the temperature and by the addition of certain chemicals. The addition of carbolic acid or of chloroform as preservatives in an immune serum does not interfere with the agglutination reaction.

In using the dried blood test, paper having a soluble gloss should be avoided for collecting the blood.

In our hands the macroscopic method for determining agglutination has proved the most useful and rapid. A time limit of three hours has been placed on all these reactions.

THE SCINTILLATING SCOTOMA OR TRANSIENT FUNCTIONAL HEMIOPIA.*

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The phenomenon of scintillating scotoma is well known, though it is not always described in the textbooks on diseases of the eye. My interest in this affection dates back many years, when I became more intimately acquainted with it through *personal experience.* Since then I have talked with many physicians, and especially ophthalmologists, who also had knowledge of it from personal experience, and what I have thus gathered is recorded here. It should be of particular interest to the general practitioner because patients suffering from this disturbance for the first time are greatly alarmed and apply to their family physician for relief. This condition was first described, so far as I know, in a dissertation by Vater and Heinecke,[1] in 1723. Since then many men eminent in medicine and in the natural sciences have described this condition as they have observed it. Various names have been applied to this phenomenon: Scintillating scotoma,[2] teichopsie,[3] *amaurosis partialis fugax,*[4] ophthalmic migraine,[5] and transient functional hemianopia.[6] The last name seems to me to be the most appropriate, though in many cases the defect occupies only a part of the half of the field.

SYMPTOMS.

The attack commonly begins with a disturbance of vision, which often greatly frightens the patient. If asked to describe the nature of the disturbance he can not do it; he is conscious, however, that there is something wrong with his sight. If he remains sufficiently calm to observe the phases of the phenomenon, he will notice if, for instance, he is looking at a printed page, that some of the letters or words either to the left or to the right, or perhaps also a little above or below the right or left of the point of fixation, are blurred, in a minute or two later they have entirely disappeared and are obliterated to his sight. Or, if he happens to be looking in the face of a person a few feet away from him, he will see only the left or the right eye, or only the right or left lower half of the face; or, if he is looking at a sign with the word Thompson on it, he will be able to see one-half of the word only, either the son or the Thomp; at the same time, his attention will be attracted by the appearance of a luminous disc at or near the place where the scotoma was first noticed. This disc is usually bounded by a far brighter and sometimes serrated outline. Very soon the disc is changed into a ring which in a short time breaks near the fixing point; the ends separate more and more, so that soon he sees a luminous arc instead of a ring. The arc gradually becomes larger and at the same time floats slowly on to the periphery of the field of vision, its convexity being directed either out, up or down. One of the ends of this arc often comes close to the point of fixation; it rarely reaches over the median line. With the enlargement of the luminous arc there is also an increase in the size of the defect towards the periphery, but it very rarely, if ever, reaches the fixing point. Sometimes the defect includes the entire half of the field of vision, and there is a complete hemiopia. The luminous arc or crescent gradually becomes fainter and then disappears entirely, in the outer periphery of the field of vision. The defect usually continues for a few minutes longer and then also disappears entirely, leaving a sensation of dazzling, which also vanishes after a few minutes.

The duration of the whole attack lasts from a few minutes to an hour or more. It leaves the eyes in the same condition in which they were previous to the attack, and, so far as I have been able to observe, never leaves a permanent defect. In a few of my cases the phenomenon was followed by a slight headache, and in a very few instances by a tingling in the extremities of the side in which the defect in the field was observed.

Some writers state that a slight vertigo often precedes the attack, but this I have never noticed. Gowers

* Read before the Newark Medical and Surgical Society.

1. Vater u. Heinecke: Dissertatio, qua visus duo vitia variissima, alterum diplocati alterum dimidiati physiologice et pathologice considerati exponuntur; Wittenberg, 1723, quoted from Schmidt-Rimpler, Die Erkrankungen des Auges im Zusammenhang mit anderen Krankheiten, Wien, 1898, p. 104.

2. Listing: Nervoeses Scotom, Monatsbl. f. Augenheilkunde, v, 1867, p. 335.

3. Airy, Sir George: On a Distinct Form of Transient Hemiopia, Phil. Trans., London, v, 140, 1870.

4. Foerster: Ueber Amaurosis partiales fugax, Klinische Monatsbl. f. Augenheilkunde, 1869, p. 422.

5. Galezowskie: Recueil d'Ophthalmologie, 1883, p. 536.

6. Gowers, Sir W. R.: A Manual of Diseases of the Nervous System, vol. ii, pp. 157, 839, 2d edition, Philadelphia.

says that in 50 per cent. of the attacks of migraine the phenomena here described are the first symptoms of the attack, and other writers have made similar statements. This discrepancy between my experience and that of the writers mentioned is doubtless due to the fact that patients in whom symptoms of migraine follow the visual disturbance consult a general practitioner or a neurologist, while those without these symptoms seek the advice of an oculist.

While in my experience the sudden development of a scotoma, that is, a defect in either the right or the left half of the field of vision, always was the first phase, other writers report cases in which the appearance of a cloud preceded the scotoma, while others state that sudden darkness in one-half of the field ushered in the attack. I have never seen this nor heard others mention it. Several of my patients who have attacks now and then, have come to me, at my request, shortly after the attack had begun, and in every one I was able to assure myself of the presence of the defect, although it was small in some cases. Some people speak of this scotoma as a darkness or a shaded darkness, but in all my cases it was a real defect, a blank or a void; whatever had been in this spot on the printed page was entirely obliterated. This defect exists in identical parts of either the left or right half of the field of vision; it may closely approach the vertical dividing line of the two halves of the field, it rarely reaches the fixation point, and very rarely, if ever, crosses the vertical dividing line of the two halves. At the height of the attack there is occasionally, for a moment or two only, an obscuration of the entire field, and very rarely there are for a moment on a printed page a few letters missing next to the fixing point in the unaffected half of the field. Sometimes, in the same persons, the left half of the field will be affected in one attack and the right half in another. In other patients, in different attacks, sometimes only a quadrant of the field and at other times the whole half of the field will be defective.

METHOD OF EXAMINING PATIENT.

As the defect is always, or nearly always, in only one-half of the field, patients subject to these attacks will say that only the eye on the side of the defect is involved, but this is a mistake, as can be proved by examining the field of each eye.

Place the patient a foot away, with his back toward a large window. Have him close one of his eyes, and with the open one look at the physician's eye opposite his open one. Now the physician closes one eye, moves his fingers from the periphery toward the center from various directions. If the patient's field is of normal dimensions he will see the tips of the fingers as soon as the physician sees them.

SPECTRAL APPEARANCE.

It is difficult to give a satisfactory description of the spectral appearance, as the light phenomenon in these cases is called by Gower. The fleeting character of the phenomenon and the mental state of the observer at the time are probably responsible for the discrepancy in the published descriptions. The most common form and the only form that I have any personal knowledge of is the following: A luminous disc appears at or near the place where the defect in the field of vision first developed, the outer edge of which is much more brilliant than the central part. It is serrated, or it may assume a zigzag shape with prominent and re-entrant angles like the ground plan of a fortification and hence "fortification spectrum."

Inside the circle there may be luminous points in constant motion. In the zigzag outline there are at times indications of color, blue and red predominating, but I have never seen any such high colors as are seen on the drawings made by Airy.[7] The luminosity of the periphery is in marked contrast with the body of the disc. Very soon the part of the ring nearest the vertical dividing line of the halves of the visual field disappears, and there remains only an arc-shaped or crescentic line of very bright light. The ends of this arc may closely approach the fixation point at first, but they soon separate more and more, while the whole arc very gradually floats outward, downward or upward toward the periphery of the field. The convexity of the arc is always directed toward the outer periphery of the field and its outer edge is usually serrated as described above. The more brilliant middle part of the whole outer line in all the serrations appears to be bounded, outside and inside, by a dark line. Sometimes the angular projections of the outline are very irregular, and at times it looks as if two or several such outlines were intermingled. This brilliant arc is in continuous and tremulous motion. In persons subject to these attacks, not unfrequently an arc-shaped, brilliant line, like the above-described, will appear suddenly in the upper or lower portion of one of the halves of the field of vision; it seems to float in the air five or six feet away, will last for some minutes and then will gradually float out of the periphery of the field.

In several such cases which I have had an opportunity to examine while their phenomena continued, I was able to make out a defect in the field corresponding to the apparent location of the floating brilliant line. These spectral appearances, I think, are always present in both eyes, though it is stated by some writers that in some of their cases it was confined to one eye. The light phenomenon is seen with the eyes closed as well, if not better, than when they are open, and this makes it difficult to determine whether it is present in one or in both eyes. To most persons subject to this affection the spectral phenomenon here described is most startling, especially in their first attacks, and their attention is so completely absorbed by it that they are unaware of this simultaneous presence of the scotoma. In a few cases I have been able to examine the pupillary reactions, and found them normal. The attacks were almost over when they were examined. The ophthalmoscopic examination made during the attack revealed always a normal fundus.

FREQUENCY OF ATTACKS.

In most persons subject to these attacks familiarity soon breeds indifference toward the disturbance and they pay but little attention to it. Some are able to go on with the work in hand, especially if the left half of the field is involved, while a few find it necessary to sit down and keep their eyes closed until the attack is over. Some people begin to have such attacks early in life, and have them of varying severity at irregular intervals as long as they live. Others have only one or two attacks during their whole existence, while still others have them only during a certain period of their lives, at more or less frequent intervals. I know of one person who has had an attack daily for a period of ten

7. Transactions of Ophthalmological Society of United Kingdom, vol. xv, plates I and II.

years, and of another who for a limited period had two attacks a day. It is said that these attacks diminish in frequency as the patients advance in years, but I know of cases in which this was not true.

GENERAL HEALTH OF THE PATIENTS.

The great majority of the patients who have consulted me with regard to these attacks claimed to be in excellent health. Many of them admitted suffering occasionally from indigestion, some admitted being children of gouty parents, while others were afflicted with various morbid conditions. In many of these people there was present an oversensitive condition of the eyes; they disliked a glare; they were troubled with muscæ volitantes, and had unusually vivid after-images, which often lasted much longer than normally. These patients were annoyed by the distortion of objects, produced by flaws and imperfections in the window pane of glass through which they were seeing them; they were poor sleepers and had many of the disorders of sleep. Some had so-called explosions in their ears just before falling asleep; others were often awakened by a feeling of numbness and tingling, mostly in their hands or arms, and others had rheumatic pains in their limbs at night only or, at least, much more frequently at night than during the day. Most of these patients were so-called nervous individuals.

Most of the persons so afflicted had normal acuity of vision, normal fields of vision, and no visible disease of the eyes between the attacks. In others diseases of the lids and of the conjunctiva, cornea or sclera were present and caused the patient to consult me, and the occurrence of these phenomena under consideration was mentioned by them only incidentally.

ETIOLOGY.

Dr. Geo. M. Gould[8] would have us believe that uncorrected errors of refraction in 99 per cent. of the cases are the cause of migraine and, I suppose, of the phenomena under consideration also, but, considering how very many people have these attacks at times, and the great number of people who have uncorrected errors of refraction, it is not at all to be wondered at if the two conditions are sometimes found in the same person; any more than that the phenomena have occurred in persons having preputial adhesions or in persons having gonorrhea or syphilis. I have examined the eyes of many persons having such attacks, under atropin, and have found many of them free from refractive errors; weakness of the external and internal muscles of the eye also was absent in most of these cases.

Among the exciting causes given in the text-books are named faintness from fasting, fullness of the stomach after eating, excessive mental work, sleeplessness, overindulgence in tobacco, and many other things; but, after all, we know little or nothing about the exciting causes. I have known people to have attacks immediately on awakening after ten hours of sound sleep in a moderately dark room. I know that some of my patients had attacks at times while the stomach was quite empty and at other times immediately after a meal. Some of my patients, professional men, had attacks as frequently while they were spending their vacations in the woods as before they went there, and one man who had not had an attack for a year, during which he did an unusual amount of work, had an attack on the voyage home after a two-months' vacation spent in the mountains. I have had among my patients with this affection men and women, boys and girls, some engaged in intellectual work, while others were factory hands or farm laborers who rarely touched a book or even read a newspaper. Some of my women patients are confident that they have their attacks more frequently at the beginning of their menstrual period than at other times.

PATHOLOGY.

With regard to the pathology of migraine, Gowers[9] says: "No anatomic changes are known to underlie the phenomena of migraine and, from the character of the symptoms and the analogies of the disease, it is unlikely that any will ever be discovered. Two chief theories have been held regarding the origin of the attacks; one is based on the alteration in the state of the vessel that is so conspicuous in the aspect of the patient. The pallor of the surface must be due to contraction of the arteries, and the blushing of the skin to their dilatation, and it is assumed that a corresponding condition of the vessels of the brain is the cause of the derangement of function. The suggestion that spasm of the central arteries is the cause of the symptoms was first made by Whytt, and the evidence in favor of this opinion afforded by the state of the accessible vessel was pointed out by Du Bois-Reymond. Mollendorf urged that vascular dilatation rather than spasm caused the symptoms, and the fact that the condition varies in different cases has led to the theory extensively held in Germany (by Eulenberg and most other writers) that there are two varieties of the disease already mentioned, the 'sympathetico-tonic' and the 'sympathetico-paralytic' form, as they are sometimes termed. According to these theories the disease is essentially one of the sympathetic nerves.

"Another theory is that the primary derangement is of the nerve cells of the brain. Their function from time to time is disturbed in a peculiar manner and the visible vasomotor disturbance is of secondary origin. The sensory symptoms must depend on deranged action of the sensory center of the brain. They indicate a combination of arrest of action and of overaction in the nerve cells concerned. In the language of modern pathology, there is a combination of inhibition and discharge. The loss of sight, for instance, must be due to inhibitory arrest of action, the visual spectrum to discharge. The peculiarities in the disturbance of migraine are its special, often uniform features, deliberate course, and its limitation to sensory structures. To explain them on the vasomotor hypothesis we must assume, first, an initial spasm of the arteries in a small region of the brain; second, that the contraction always begins at the same place, and third, that it can give rise to a definite, uniform and very peculiar disturbance of function. There is no evidence of the truth of any one of these assumptions, and we are not justified in assuming that the state of the surface vessels and accessible arteries is an indication of the condition of those internal organs. Last, that the vasomotor spasm can cause a deliberate uniform and peculiar discharge is not only unproved, but is in the highest degree impossible. In short, the difficulties in accepting the vasomotor explanation of the sensory symptom is so great that it would only be admitted as a tenable hypothesis if there were no other explanation of the coincidence of the two phenomena. We know that the vascular system is in a special way under the influence of the cerebral centers. An emotional blush and the pallor of fear are conspicuous examples

8. Gould, Geo. M.: Amer. Med., Jan. 21, 1905, p. 103.

of this fact. It is at least as easy to believe that the vascular changes are the result of the disturbance in the nerve elements as it is to regard them as its cause. The vasomotor nerves are peculiarly sensitive to sensory impressions that are felt as pain. No symptoms at all resembling those of migraine have been observed when the sympathetic system is distinctively diseased or deranged.

"The peculiar character of the visual impression affords strong reason for regarding it as the result of a tendency to functional derangement in the cells themselves. This opinion is supported by the fact that it may occur as an isolated symptom, and that it may be related to an actual visual impression, as is shown by the facts mentioned. Such an occurrence can have been due only to a primary functional disturbance of the cells themselves, and that which exists in one case probably exists in all.

"The hemiopia also is best explained by the assumption of deranged function in the occipital lobe, especially since right hemiopia may correspond to almost simultaneous aphasia, and the opinion is supported by the fact mentioned above that hemiopia is fixed by a lesion in the cuneus. When all has been said, mystery still envelops the mechanism of migraine."

Jolly,[9] whose clinical experience with this affection is similar to mine, thinks: (1) That the seat of scintillating scotoma in its most frequent, hemiopic form in all probability is located in the primary optic channels and more particularly in the optic tract or in the region of the external geniculate body; (2) that the binocular central, and the hemiopic scotomata which cross over the median line have their place of origin in the more peripheral part of the channel, probably in the region of the chiasm; and (3) that the purely monocular scotoma originates in the optic nerve or the retina.

TREATMENT.

Gowers says in reference to the treatment of migraine: "If any errors in mode of life or defects in general health can be traced, their removal is the first and most essential step in treatment; of special importance is increased rest, regularity in meals and attention to diet; whatever is known to induce a paroxysm should be carefully avoided. Hot, crowded rooms are especially injurious. If inherited gout is probable, the regimen suitable for this should be adopted. In cases with conspicuous pallor in the early stage the drug that has most influence is nitroglycerin given regularly in the interval (migraine) twice or three times a day after food, beginning with a small dose 1/150, 1/180, 1/200 of a grain in 1 per cent. solution of alcohol."

During the attack absolute rest is essential; the recumbent posture is generally that in which the patient is most comfortable.

Some of my patients think that the attack is shortened by drinking iced water; others believe that spirits, coffee, tea and other beverages, taken immediately at the beginning of the attack produce a similar result. Others attribute the same result to taking from 10 to 20 drops of valerianate of menthol on a lump of sugar; while others, following the advice of Manz,[10] believe they have shortened the attack by gently pressing the eyeballs and rubbing the lids over the balls for a few seconds. In view of the great difference in the severity and in the duration of the attack at different times in the same person, it is impossible to say how much benefit was derived from any of the measures employed.

9. Jolley: Berliner klin. Wochft., No. 42, 1904, quoted from Nagel's Jahresbericht, 1902, p. 459.

10. Manz: Quoted by Schmidt-Rimpler, Die Erkrankungen des Auges im Zusammenhang mit anderen Krankheiten, p. 108.

INTESTINAL PERFORATION COMPLICATING TYPHOID FEVER.*

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Perforation of the bowel is one of the most serious complications which occurs in this disease, and it demands prompt attention first from the medical man, next from the surgeon. Before proceeding with the paper proper, I desire to report, in more or less detail, 12 operative cases which have occurred in my practice in the last twenty-one months.

These cases, in conjunction with 7 previously reported,[1] making a total of 19, have given eight recoveries, making a recovery percentage of 42.10.

CASE 1.—Referred to me by Drs. T. L. Disque and Lawrence Litchfield, Pittsburg, Pa. Perforation, peritonitis, death.

Patient.—G. K. H., male, aged about 24, had an attack of typhoid fever with a relapse in December, January and February, 1902 and 1903, respectively.

History.—The initial course of the fever was mild. Dr. Disque attended him in this attack and made his last visit Jan. 4, 1903. The patient soon after was following his usual vocation.

On January 26 Dr. Disque was called again to see him and found him with a relapse of the fever. This attack was a little more severe than the first.

On Feb. 3, 1903, Dr. Disque called to see him at 12 noon and found him suffering from a pain in the abdomen. The muscles of the abdomen were slightly rigid at this time. There was no change in the pulse nor in the temperature. The onset of pain occurred about 10 a. m., and the pain and tenderness increased during the afternoon. At 8 p. m. Dr. Litchfield saw the patient, in consultation with Dr. Disque, and the diagnosis of perforation was confirmed.

Operation.—I saw the patient about 9:30 p. m. of the same day and we operated on him at 12 midnight. Fourteen hours had elapsed since the onset of the pain. The abdomen was opened, under cocain anesthesia, in the right semilunar line. The abdomen contained a flocculent fluid and the perforation was found in the lower part of the ileum.

The perforation was closed by two tiers of continuous Lembert sutures of silk and the bowel returned to the abdomen. The abdominal cavity was then flushed out with warm normal salt solution. A large glass drain was inserted to the bottom of the pelvis and the abdominal incision closed around it.

Result.—The patient did fairly well for about forty-eight hours. He passed some gas by the bowel and the rigidity of the abdomen disappeared to some extent. On the third or fourth day, as he was not passing much gas by the rectum and as he was becoming somewhat distended, we decided to open the bowel at the site of the perforation. This was done under a little chloroform anesthesia. This did not avail, and he died on February 7th, from peritonitis.

The abdominal fluid at the time of operation contained white blood cells, a motile bacillus and a coccus. The bacilli under laboratory culture produced gas, and hence belongs to the colon group.

CASE 2.—Referred to me by Drs. A. Stanton and T. G. Simonton of Pittsburg, Pa. Perforation, peritonitis, death.

*Read before the Allegheny County Medical Society, 1904.

1. Amer. Med., Sept. 6, 1902.

Patient.—G. S., male, aged 30; developed fever about March 4, 1903.

History.—He had one slight hemorrhage on March 18, otherwise he did not present symptoms showing anything unusual until the afternoon of March 19, when he complained of a severe pain in the abdomen. The maximum temperature had been up to this time 102 F. Dr. Stanton had insisted on the use of a bed pan, but the patient said he could not have evacuations that way, and on this date sat up to use the closet or a commode. Immediately after doing this he had the initial onset of pain, which was severe and continuous. This occurred between 3 and 4 p. m. Dr. Stanton saw him at 4 p. m. He complained greatly of the pain and was in collapse, with its accompanying symptoms, and a diagnosis of perforation was made at this time.

Consultation.—Dr. Simonton, who was called in consultation, saw the patient about 9:30 p. m., and they found the following conditions present: Temperature, 104; pulse, 100. There was severe pain in the abdomen, more acute on the right side, and much distension of the abdomen. The walls were rigid. The liver and splenic dullness was absent. The peristalsis was impaired. There was tenderness on pressure all over the abdomen, more marked on the right side. The facies were characteristic of peritonitis.

Operation—As it was impossible to operate on him at his room, removal to the hospital was necessary. This was done, and he arrived about 12:30 a. m. at Mercy Hospital, where I saw him for the first time. The ride in the ambulance did not change his condition. At 1 a. m., nine and a half hours after the onset of pain, as near as we could determine, we opened the abdomen under cocain anesthesia. The incision was made in the right semilunar line, on a level with the cecum. The cavity of the abdomen contained much fluid. The perforation, ⅛ of an inch in diameter, was found in the ileum 6 inches from the ileocecal valve. The perforation was closed by two tiers of silk Lembert sutures introduced transversely to the axis of the bowel, which was then returned to the abdominal cavity. The abdomen was then thoroughly flushed out with warm normal salt solution. A large glass drain was inserted to the bottom of the pelvis for drainage and the abdominal incision closed as much as possible by sutures. He was then returned to his bed, placed in Fowler's position. He died March 21, 30 hours after the time of the operation.

CASE 3.—Referred to me by Dr. B. M. Dickinson of the medical staff of Mercy Hospital. Perforation, peritonitis, death.

Patient.—M. G., male, aged 27, was admitted to Mercy Hospital, April 28, 1903, with typhoid fever, having been sick 7 days previous to this time. I am not able to give the medical history and the symptoms of perforation in this case, as his record could not be found. From the appearance of his temperature chart I believe his infection was rather severe. The perforation occurred on May 5, 1903.

Operation.—Cocain anesthesia. Celiotomy was done on the afternoon of May 5, 1903. The perforation was found in the lower part of the ileum. The perforation was closed by two tiers of continuous silk sutures (Lembert) and the bowel returned to the abdomen. The abdomen was flushed out with warm normal salt solution and a glass drain inserted to the bottom of the pelvis. He died on May 6, a little more than 24 hours after operation. A bacillus and a coccus were found in the abdominal fluid.

CASE 4.—Referred to me by Dr. J. A. McCullough, Steubenville, Ohio. Perforation of the appendix—recovery.

Patient.—A. L., male, aged about 30 years, had been ill with typhoid fever for about 3 weeks.

History.—On May 29, 1903, between 2 and 3 p. m., he had a sudden pain, severe and continuous, in the cecal region. He soon afterwards had a chill with a rise of the temperature. I saw the patient with Dr. McCullough about 12 midnight. At this time he still complained of the pain. There was tenderness on pressure over the cecum and the right rectus was somewhat rigid at this point. There was no tenderness over the remaining part of the abdomen. The peristalsis was normal and the liver dullness was present.

Operation.—May 30, 1 a. m. The abdomen was opened under cocain anesthesia in the right semilunar line on a level with the cecum. The abdominal cavity did not contain any fluid nor was the peritoneum inflamed. The appendix was bound down by adhesions and when delivered it was found to be perforated. A small abscess was present around the appendix, but there had been no escape of pus into the peritoneal cavity. The appendix was removed.

Gauze was inserted to the position formerly occupied by the appendix.

Result.—He made a tedious recovery. No peritonitis developed.

If this patient had been left alone a large abscess would certainly have developed.

CASE 5.—Referred to me by Dr. B. M. Dickinson of the medical staff of Mercy Hospital. Perforation, peritonitis, pneumonia, death.

Patient.—B. G., a Pole, male, aged 21, was admitted to Mercy Hospital on Sept. 18, 1903, suffering from typhoid fever.

History.—He said he had been sick one week. On the evening of Sept. 19, one day after admission, he complained of a pain in the abdomen. This soon passed away and his history relates that he soon fell asleep. This pain occurred probably about 10 p. m., as his temperature chart shows he had a chill at this time. His temperature was then 104 and pulse 100. The next morning he again complained of pain in the abdomen. The temperature was 99, a drop of 5 degrees in 12 hours. The pulse was 100 and he was sweating profusely. His abdomen was rigid, distended, and peristalsis was absent. A laparotomy was performed under cocain anesthesia about 10 a. m. on September 20. The incision was made in the right semilunar line on a level with the cecum. The perforation was found in the ileum 8 inches from the ileocecal valve. It was closed by a purse-string suture first over which two tiers of silk Lembert sutures were introduced. The abdomen was then thoroughly flushed out with warm normal salt solution.

Result.—The hospital record of this patient is brief and I can not give the facts from memory. He was apparently doing nicely but pneumonia developed and he died on September 25, five days after the operation.

No organisms were found in the abdominal fluid and no growth occurred from culture.

CASE 6.—Referred to me by Dr. I. J. Moyer of the medical staff of Mercy Hospital. Perforation, peritonitis, recovery.

Patient.—J. N., male, aged 21, was admitted to Mercy Hospital November 19, 1903, with typhoid fever.

History.—His mother, one brother and five sisters living; his father died of heart disease and three sisters died in infancy. He had inflammation of the lungs when a boy of six and was one year in recovery. He had been ill subsequently from the same trouble and has never been strong.

Present Illness.—He was taken sick November 7, with headache, insomnia, pain in the back and in the legs, anorexia and diarrhea, having 6 or 7 stools daily. He was much emaciated. The spleen was enlarged and tender. The heart and kidneys were normal. A Widal test taken a few days after admission reported back negative. He had five or six severe hemorrhages from November 26 to November 30. At 10 p. m. November 30, the twenty-third day of the disease, he had a severe pain in the lower right quadrant of the abdomen. This man always complained of every pain very much and so little attention was attached to this important symptom. He passed a very restless night. He had a chill at 4 a. m. lasting twenty minutes. At 10 a. m. the symptoms had increased. The muscles of the abdomen were rigid but not pronounced. Peristalsis could be heard, the quality and quantity not marked. The abdomen was scaphoid,

and up to this time there had been no appreciable change in the pulse or temperature.

Operation.—December 1, 1 p. m. Celiotomy, ether narcosis. Thirteen hours had elapsed since the onset of the pain. An incision two inches long was made in the right semilunar line on a level with the cecum. The abdominal cavity contained a flocculent fluid. The perforation, ⅛ of an inch in diameter, was found in the ileum, four inches from the ileocecal valve. The opening in the bowel was closed by two tiers of continuous silk sutures (Lembert), after which the bowel was returned to the abdominal cavity. Large quantities of warm normal salt solution were then used to flush out the cavity of the abdomen. A large glass drain was inserted to the bottom of the pelvis for drainage and the patient removed to his bed, which was placed in Fowler's position.

Result.—Examination of the fluid obtained from the abdomen at the time of operation showed it to contain, beside blood cells, only a micrococcus. At 7 p. m., the day of operation, the bed was placed in a horizontal position for the reason that the pulse had gone steadily upward. Five minutes after the bed was lowered the pulse came down from 138 to 124. The glass drainage tube was also removed at this time, some gauze being first inserted through the tube to serve as drainage.

Enemas given at varying intervals during the first twenty-four hours always came away with much flatus and some fecal matter.

He made a tedious recovery. When he left the hospital, Jan. 21, 1904, to go to his home in Russia, he had an abdominal sinus four or five inches in depth.

I have since heard that he had entirely recovered.

CASE 7.—Referred to me by Dr. B. B. Wood, Pittsburg, Pa. Perforation, peritonitis, death.

Patient.—F. W. M., male, aged 24, first consulted Dr. Wood Dec. 27, 1903. He had been complaining for about ten days. He had a cough, with profuse night sweats at this time. Dr. Wood is of the opinion that he was a tubercular subject.

History.—Typhoid fever developed, which ran the regular course. January 13, at 3 p. m., he had a hemorrhage, and he passed some blood during the night, having several bloody stools. At 7 a. m. on January 14 he was weak from the loss of blood. At this time Dr. Wood saw no indication of perforation. At 9 a. m. his condition was changed. The abdomen was somewhat rigid and he had the expression of one suffering from shock. I met Dr. Wood in consultation about 5:30 p. m. at the patient's home. At this time he had the signs of peritonitis. His abdomen was rigid and peristalsis was faint. His pulse was weak and he was perspiring freely. It was not advisable to perform the operation at his home, so we transported him to Mercy Hospital. It was recognized that this was not a good case for operation, but as he did not have any chances without operative interference we decided to give this chance.

Operation.—7 p. m.; celiotomy; cocain anesthesia. Not more than twelve hours had elapsed since the perforation had occurred. An incision was made in the right semilunar line on a level with the cecum. The perforation was found in the ileum within eight inches of the ileocecal valve. It was closed by two tiers of continuous silk sutures (Lembert) and the bowel returned to the abdomen. The cavity of the abdomen was then flushed out with warm normal salt solution. A glass drain was introduced to the bottom of the pelvis and the abdominal incision closed as much as possible. He went into collapse on the table and it was necessary to give a saline transfusion. He reacted but little and died about 11 p. m.

CASE 8.—Referred to me by Dr. G. T. Ribetti, Pittsburg, Pa. Perforation, peritonitis, second perforation, death.

Patient.—S. H., male, aged 15 years, became ill with typhoid fever on June 5, 1903. He had a very mild attack.

History.—The temperature was not high at any time, and he did not have any bad symptoms whatever until June 26, exactly fifteen days after the onset of the fever. At 1 p. m. of this date he had a severe pain in the abdomen, accompanied by some rigidity of the right rectus muscle. The pain and the rigidity disappeared within two hours. No morphia was given. He was admitted to the hospital early the next morning with the following symptoms: The abdomen was rigid. Pain was present on pressure over the abdomen. The peristalsis was not entirely absent and he had the facies of peritonitis. Nineteen hours elapsed after the onset of the pain before celiotomy was performed.

Operation.—The operation was performed under cocain anesthesia. An incision was made through the right semilunar line on a level with the cecum. The abdomen contained a large quantity of a flocculent fluid. The perforation was found in the ileum, eight inches from the ileocecal valve. The opening in the bowel was closed by two tiers of continuous silk sutures (Lembert) and returned to the abdominal cavity. The abdominal cavity was then thoroughly flushed out with warm normal salt solution. A large glass drain was inserted to the bottom of the pelvis for drainage. He was then returned to his bed, which was placed in Fowler's position.

The fluid in the abdomen at the time of operation contained a diplococcus, many leucocytes and granular material.

Result.—The glass drain was removed the first day after operation and the head of the bed lowered at the same time. Before removing the tube a strip of gauze was inserted through the tube to act as drainage. The patient at once began to improve. He was soon passing much flatus, with and without the aid of enemas. He was troubled with some emesis for several days, but soon was able to take liquid nourishment. For ten days he did well. By this time he was gaining in weight, apparently; his color good; his bowels moved regularly and his abdomen was as soft as a baby's. On June 30 he complained of pain in the chest, and pleurisy and catarrhal pneumonia developed. Coincident with this unfortunate complication, a fecal fistula occurred, and peritonitis again became a factor in his case. He died July 2.

Autopsy.—Either complication would make the prognosis very serious. I thought, and naturally believe, that the fecal fistula was due to the opening of the perforation on account of the tearing out of the sutures, and was much surprised when a restricted autopsy, done by Dr. W. H. Ingram,[2] showed the cavity of the abdomen to contain fecal matter which came from a second perforation high up in the jejunum. The perforation was ½ inch in diameter, the largest I have seen. The sutures in the bowel at the site of the first perforation were found to be intact.

CASE 9.—Referred to me by Dr. B. M. Dickinson of the medical staff of Mercy Hospital. Perforation, peritonitis, second perforation, fecal fistula, recovery.

Patient.—J. F., male, aged 29; was admitted to Mercy Hospital June 22, 1904, with typhoid fever.

History.—The fever had evidently commenced two weeks before, with anorexia and malaise. The week previous to admission he had several liquid stools daily. During the first week of treatment in the hospital he had three hemorrhages from the bowels; the last one occurred the day before the perforation. Otherwise he did not have any unusual symptoms. On July 1, at 3:45 p. m., the twenty-second day of the disease, he had a severe pain in the cecal region, which came on suddenly and was continuous. Dr. J. A. Reidy, medical resident, saw him soon after this occurred, and made a diagnosis of perforation. At this time he was tender all over the abdomen on pressure; the tenderness was more acute on the right side. The abdomen was flat but rigid. Peristalsis was present but not marked. Liver dullness diminished. I saw him between 5 and 6 p. m. and he still presented the same symptoms, but a little more marked, and confirmed Dr. Reidy's diagnosis. Soon after perfora-

2. Professor of Histology, Pathology and Bacteriology, Western University of Pennsylvania.

tion occurred his temperature was 96.2 degrees. At 7 p. m. his temperature was 102.6 and his pulse was 126.

Operation.—Cocain anesthesia; 3¾ hours after onset of pain we made the usual incision in the right semilunar line. The perforation, ⅛ of an inch in diameter, was found in the ileum, six inches from the ileocecal valve. The opening was first closed by a purse-string suture of silk, the opening in the bowel being pushed into the lumen as the suture was drawn tight, over which two or three interrupted Lembert sutures, also of silk, were introduced.

Another ulcer, about four inches from the cecum was observed, but as the serosa over it seemed to be in good condition I did not think it necessary to invert it by suture, as is sometimes required. The abdominal cavity, which was filled with a turbid fluid, was washed out with warm normal salt solution. The portion of the bowel containing the perforation, although now closed by sutures, was anchored by a continuous silk suture to the peritoneum at the upper angle of the incision through the abdominal wall. A large glass drain was then inserted to the bottom of the pelvis. No sutures were introduced to close the abdominal incision. He was then removed to his bed with its head slightly elevated, but I did not keep him up very long, as his pulse was very weak and rapid, 168 to the minute.

Result.—The next day at 11 a. m. a strip of sterile gauze was inserted into the glass drainage tube and the tube withdrawn. I did this so early in this case for the reason that the fluid in the abdomen at the time of operation contained only blood cells and proved sterile under culture. The second day after operation I noticed that the gauze which had been introduced the day before was stained with fecal matter, and the gauze drain was then removed. This fecal matter did not come from the perforation closed by sutures, as it was intact, but must have come from a second perforation and most likely from the ulcer previously described. Although fecal matter in large quantities was constantly in contact with the site of the sutures over perforation, it never opened. The fecal fistula, which closed about October 1, opened October 18. The opening is, however, small. The resulting scar at site of abdominal incision is firm and shows no sign of hernia.

CASE 10.—The patient was referred to me by Dr. Karl Emmerling, Pittsburg, Pa. Perforation, peritonitis, fecal fistula, recovery.

Patient.—Miss A. M., schoolgirl, aged 14, was taken sick on July 3, and had an attack of typhoid fever with no unusual symptoms until July 31.

History.—The course of the fever would indicate that the infection was of a mild form. At 9 p. m. on July 31, the twenty-eighth day of the disease, she had a severe and continuous pain on the right side of the abdomen, in the region of the cecum. The pain came on suddenly and occurred just after a free movement of the bowels. At 11 p. m. I saw her, in consultation with Dr. Emmerling. She still complained of much pain and presented the following symptoms: Her features were pale and pinched. The pulse was about 120 and the temperature was 101 degrees. The abdomen was flat. The walls were rigid. Tenderness was present on pressure all over the abdomen, but it was more acute on the right side. Peristalsis of a fair character was present. Liver dullness was absent in the nipple line. The patient having the above symptoms, we did not hesitate to make a diagnosis of perforation and advised immediate operation, which we performed as soon as we could move the patient to Mercy Hospital.

Operation.—Ether. Four hours after the onset of pain we made an incision two inches long through the right semilunar line on a level with the cecum. The perforation, ⅛ of an inch in diameter, was found in the ileum, eight inches from the ileocecal valve. The perforation was treated as in the previous case. The portion of the bowel containing the perforation was anchored in the upper angle of the wound, as also in the previous case. The abdominal cavity, which contained a flocculent and turbid fluid, was washed out with warm normal salt solution and a large glass drainage tube inserted at the bottom of the pelvis. No sutures were introduced to close the abdominal incision. Patient was removed to bed, which was placed in Fowler's position. The drainage tube was removed in a few days.

Result.—From the first she did well. On the seventh day a fistula developed, caused by the opening of the sutures closing the perforation. A small amount of fecal matter escaped daily. At the present time the opening is almost closed and will be entirely so in a short time. During her convalescence she had some elevation of temperature, which lasted for three or four weeks. This temperature was most likely due to a typhoid reinfection, no other condition being present to produce it. The abdominal fluid contained a coccus and a motile bacillus. A mold grew on culture.

CASE 11.—Referred to me by Dr. J. G. Stewart, Pitcairn, Pa. Perforation, peritonitis, recovery.

Patient.—M. F., male, aged 19; the first symptoms of fever appeared on Aug. 4, 1904.

History.—He had a severe infection, but did not have any complications with the exception of three slight hemorrhages (on August 31, September 2 and September 4, respectively) until Sept. 6, 1904. On this date, at 11 a. m., he had a severe pain in the lower right quadrant of his abdomen. The pain was excruciating in character. It came on suddenly and was continuous. Dr. Stewart saw him at 12 noon. The pain was severe and continuous and was diffused over the abdomen. Morphia was administered for the pain, but perforation was suspected. Dr. Stewart saw the patient again at 3 p. m., and made absolute diagnosis of perforation. At this time the patient was in collapse. The temperature was 94 and the pulse was weak and rapid and he had the facies so characteristic of shock. I saw him, in consultation with Drs. J. G. Stewart of Pitcairn and G. H. Beswick of Wilmerding, Pa., about 7 p. m. At this time he had recovered from the shock, that is, his temperature had risen and he had a pulse of 120. He was very tender all over the abdomen. The muscles were rigid. Peristalsis was present but of no great quantity or quality. The liver dullness was absent in the nipple line. His features were characteristic of peritonitis and shock.

Operation.—8 p. m.; cocain (locally) and chloroform narcosis. Morphia, ¼ gr., had been previously given. This was the thirtieth day of the disease and nine hours had elapsed since the onset of pain. The usual incision was made in the right semilunar line. Two perforations were found, both of them in the ileum; one about eight inches from the ileocecal valve, the other about seven inches further along. A third ulcer was apparently almost through the walls of the bowel and this ulcer was inverted into the bowel by means of a purse-string suture of silk and which was reinforced by two or three interrupted Lembert sutures (silk). The first ulcer, nearest the cecum was closed as in Case 9. The second perforation was treated in almost a like manner. This one presented a peculiar appearance. When first discovered it had a white necrotic area at the apex of the ulcer, and which, on the manipulations of the bowel necessary in introducing the sutures, caused this neurotic area to become detached, leaving the opening similar to the appearance of perforations of later stages. This ulcer had not advanced to the final state of perforation, but through the necrotic area; organisms present in the bowel could easily pass and set up peritonitis.

The first perforation was one-eighth of an inch in diameter; the second perforation would have the same diameter had it gone on to the final state. The bowel at the site of perforation nearest to the cecum was anchored to the peritoneum at the upper angle of the abdominal incision, as described in Case 9. A large quantity of warm normal salt solution was then used to flush out the cavity of the abdomen. A large glass drainage tube was inserted to the bottom of the pelvis for drainage, a wick drain being used for the purpose. On September 9.

the third day after the operation, the bowel was opened to aid the escape of gas and fecal matter. He was at this time passing gas by the rectum, but he was also becoming more distended, and, as we had anchored the bowel for just such a complication following operation, the procedure was carried out.

Result.—He is making a good recovery. About three weeks after the operation he had a rise in temperature to 103 degrees, but it gradually came down and he is now convalescing. The fistula remains open. The cause of the temperature was probably due to a typhoid reinfection.

CASE 12.—Referred to me by Dr. B. M. Dickinson of the Mercy Hospital. Perforation, peritonitis, death.

Patient.—G. P. M., male, aged 24, was admitted to Mercy Hospital on Sept. 6, 1904, with the symptoms of typhoid fever well established.

History.—He had been sick for two weeks before admission. The infection was severe in this case. The nervous symptoms were pronounced at times and he had seven distinct and large hemorrhages in six days. He was troubled with emesis and hiccough, probably due to the use of morphia, which had been given to control the hemorrhages.

On September 22, about 7 a. m., he complained of pain in the lower right quadrant of the abdomen. The pain was not very severe at first and was referred to the end of the penis. There was no appreciable change in the pulse or temperature at this time.

At 1 p. m., when I saw him, in consultation with Dr. Dickinson, his pulse had increased 20 beats and was running at the rate of 130, and his temperature had gone up 1.8 degrees, being 102.2 degrees. There was tenderness on deep pressure all over the abdomen, but the pain was more acute in the lower right quadrant of abdomen. The muscles of the abdomen were slightly rigid. The peristalsis was good and the liver dullness was not obliterated. Dr. Dickinson had made a diagnosis of perforation and nothing remained to do but operate.

Operation.—Chloroform narcosis; 2 p. m. This was the thirtieth day of the disease, with the perforation occurring seven hours previous to this time, as nearly as we could determine. A two-inch incision was made in the right semilunar line, on a level with the cecum. Search was first made for the cecum and appendix, which were found not to be diseased. The ileum was next exposed and the perforation was found about twelve inches from the ileocecal valve. The perforation was closed as described in Case 9. Two ulcers in the bowel, one on either side of the site of the perforation, a few inches away, were turned in by a purse-string suture of silk.

The bowel at the site of perforation was then anchored to the peritoneum at the upper angle of incision, as in Case 9. The abdomen was then thoroughly flushed out with warm normal salt solution and a large glass drain inserted to the bottom of the pelvis. Two pieces of gauze were introduced in the drainage tube to act as a wick drain. He was then removed to his bed, which was placed in a modified Fowler's position. Immediately after operation, 3 p. m., his pulse was 140 and the temperature by the rectum was 105.2 degrees. The temperature gradually came down in 48 hours to 98.2 degrees, by axilla.

Result.—He was at times delirious and hiccough and emesis were troublesome symptoms at intervals. He was always able to pass flatus with the aid of enemas.

The temperature remained about 100 degrees all the time. His pulse averaged 120 beats to the minute. His abdomen became almost free from pain on pressure and fair peristalsis could always be heard, apparently showing the peritonitis to be lessening. He died on September 26, however, the fifth day after operation. No autopsy was obtained. The toxemia, due to the fever itself, seemed to be a prominent factor for his death.

MORBID ANATOMY OF THE ULCER.

It is obvious to all that the cause of perforation is the penetration of all the coats of bowel wall by the ulcer, the pathologic lesion in typhoid, but I wish to present what my observation has led me to believe is the process causing the complete penetration of the bowel.

To understand the process more thoroughly a review of the morbid anatomy of the ulcer may not be out of place.

The ulcers arise from the pathologic process which takes place in the lymphatic follicles known as the solitary glands and in the agminated glands known as Peyer's patches. The process is most marked in the lower end of the ileum, but occurs also in the cecum, the appendix, the jejunum, the rectum, the colon, and, according to Pepper, it has been observed in the duodenum and stomach.

First comes the stage of infiltration of the lymphoid glands and, if resolution is not established, the stage of necrosis follows; then ulceration and cicatrization come in sequence. Wherever inflammation exists the blood vessels become enlarged, tortuous and engorged with leucocytes. This occurs around the lesion just referred to, and begins when infiltration starts. The tissues beyond the area of the lymphoid glands are involved, extending over the edges of the lymphoid follicles to the healthy mucous membrane, and even into the muscular coats of the bowel. When one of these lymphoid follicles has gone on to the stage of ulceration, and the process has extended into the muscular coats, the serosa and the remaining coats of the bowel at apex of ulcer become deficient in blood supply, gradually become necrotic, and perforation is the result.

I have observed that the coats of the intestines over the site of a non-perforated ulcer are always darker in color than elsewhere, thus showing that the circulation is impaired.

The deficiency of the blood supply is due to two causes:

1. The extreme degree of inflammation with the accompanying swelling of the tissues causing a slowing and stagnation of the blood current.

2. The position of the ulcer. The ulcer of more or less size and depth being on the free border of the bowel and opposite the blood supply, would, by its own position, retard the blood current to the thin covering of the bowel over the ulcer where it is most needed. These two conditions, always present, are factors, it seems to me, in the penetration of all of the bowel coats by the ulcer.

DIAGNOSIS OF PERFORATION.

Highly congested and inflamed tissues are always very friable and it appears strange that we do not have more perforations under such conditions. The diagnosis of perforation is usually easy. The symptoms are so characteristic that even when the patient is a foreigner or is delirious the diagnosis can be made just as well. The symptoms are, as a rule, the same.

Symptoms.—The typical symptoms are as follows: Pain comes on suddenly, and is severe and continuous, although it may occasionally be intermittent. It is first noticed usually in the right cecal region and may be referred to the external genitals. The whole abdomen is usually tender on pressure. The right rectus becomes rigid, and the rigidity later extends to the left rectus. The peristalis is not much impaired at the time; in fact, it may be increased for a short period, but later it is lessened and finally is absent. Liver dullness in the nipple line is lost at varying times, depending on the

distension of the bowel and the amount of free gas in the cavity of the abdomen.

The facies is characteristic of one suffering severe pain and possibly shock. The shock is characterized by a blanched countenance, a pinched nose and a feeble, rapid pulse, and a subnormal temperature may be present. In my experience, in but few cases has there been a drop of temperature or a perceptible change in the pulse at the time of perforation. Slight nausea or vomiting is usually present. Whether the temperature has fallen or not it soon rises. This is due to a spreading peritonitis. The pulse increases in frequency, the rigidity of the abdomen and the tenderness is more marked, and the facies is one of peritonitis. The patient may have several evacuations of the bowels after the occurrence of perforation.

As time elapses after perforation has occurred, all the symptoms increase in severity. The symptoms are then due to a peritonitis. The leucocytic count may be of some value in making the diagnosis, but not much importance should be attached to this procedure, and, in any case, with the above symptoms, confirmation is not needed, even if the leucocytic count coincides with the symptoms.

In cases where hemorrhages occur it would be well to be on the watch for perforations. Four of the twelve cases just reported had hemorrhages.

The three cardinal symptoms are, however, the sudden pain, the rigidity and the tenderness of the abdomen to pressure. These three symptoms being present in any case of typhoid fever, operation is indicated and demanded.

Occasionally if the patient is seen soon after the occurrence of the perforation the rigidity will only be detected on deep palpation, and the tenderness will only be found over the site of the perforation. This being so, the sudden pain is the only symptom on which to make an early diagnosis unless a careful examination is made for rigidity and tenderness. These three symptoms should be firmly fixed in mind. The other symptoms, when present, should not be disregarded. They are, however, almost all due to the peritonitis.

Instructions to Attendants.—The parents, attendants or nurses who have charge of the patient should be instructed to notify the physician when any sudden, severe or unusual pain occurs in the abdomen. It is well to have a card with the symptoms of perforation on it; the card to be given the nurse or attendant of the patient.

Dr. Emmerling, in case 10, instructed the mother to notify him in case any sudden pain occurred. In this instance we saw the patient in consultation exactly two hours after the onset of pain, and the diagnosis was made at that time.

By following this plan it is possible to make the diagnosis of perforation early and to have prompt surgical intervention. Nothing is gained by waiting. Even if no cause is found for the symptom once in a while, it is better to err on that side than to lose lives by waiting for more pronounced symptoms.

Other Complications.—There are a few other complications occurring in the course of typhoid fever which give symptoms almost identical with perforation, such as the softened and ruptured mesenteric glands, softening of the spleen and rupture of the gall bladder due to ulceration. The treatment is practically the same as for perforation and will not be considered in this paper.

PROGNOSIS.

The prognosis is always serious. More so than from other causes of perforations for the reason that the complication comes in typhoid fever at a time when the normal powers of resistance are weakened by two or three weeks of previous illness. The final result, that is, recovery or death, depends on several factors.

First—The physical condition of the patient before the advent of the fever.

Second—The character of the typhoid infection, whether it is mild or severe.

Third—Other previous complications.

Fourth—The organisms found in abdominal fluid after perforation.

Fifth—The time of operation after the occurrence of the perforation.

Patients are occasionally heard of who have the symptoms of perforation and yet recover without operation, but their number is small. No one claims that more than 5 per cent. recover without operative interference.

This class of cases, "recovery without operation," can be subdivided as follows:

First—Those having abscess formation.

Second—Those without abscess formation.

Recovery at times occurs in cases of the first division. It is my belief that the abscess cases are usually the result of ulceration and perforation of the appendix. The appendix being a more fixed part of the bowel than any other in which perforations take place and so frequently the cause of abscess formation, this would seem reasonable. Of the second division, in which the patients simply recover, I believe that these are not cases of perforation and that the symptoms present are due to some other cause. When perforation occurs in any part of the intestine except in the appendix I believe they very rarely recover without operative interference. It is possible, but not likely.

TREATMENT.

The only treatment is operative. Prompt surgical intervention should be done early unless there is a great lowering of the temperature, when time should be given for the patient to react.

When the operation is done within six hours after perforation occurs it is the belief of the writer that we will have a recovery of 50 per cent.

The closing of the perforation is naturally the first thing to be done. There is usually some difficulty in this procedure because the bowel is very friable on account of the great degree of inflammation at this point. Of late I have first used a purse-string suture, over which I introduce one or two tiers of continuous Lembert sutures, always of silk.

The Lembert sutures should be introduced transversely to the long axis of the bowel. In my last four cases, after closing the perforation, I have made use of another procedure which has saved the lives of two, possibly of three, of the four patients. This procedure in dealing with the closed perforation of the intestine is original with me, although it has most likely been made use of by other surgeons. It consists in simply anchoring the bowel at the site of the perforation to the peritoneum at the upper angle of the incision through the walls of the abdomen. This should be done so that all the sutures introduced to close the perforation are extraperitoneal. The advantages of this over the old method of returning the bowel to the abdomen are great. They are as follows:

First. The bowel can not return to its normal position within the cavity of the abdomen, which, by reason of the perforation, is the site of the most intense inflammation of the adjacent peritoneum and intestines. In the old method, when the bowel is returned, it will come to rest at this point and bathe the sutures in pus, with the consequence that the sutures are more liable to pull out.

Second. Acute obstruction is not so liable to follow for the same reason.

Third. The contents of the bowel will flow outside of the abdomen and not inside in case the sutures in the bowel tear out.

Fourth. An artificial anus can easily be made should partial or complete obstruction develop.

The toilet of the peritoneal cavity is important. The constant repetition of the procedure carried out in every reported case was principally to impress this fact. Every part of the greater peritoneal cavity from the pelvis to the diaphragm should be thoroughly flushed out with warm normal salt solution. The flushing should be continued until the fluid coming out is clear.

There is always fluid in the abdominal cavity following a perforation. Sometimes it is almost amber colored, like ascitic fluid. At other times it is flocculent, dirty and bloody, and may contain bands of organized lymph and fecal matter. To leave this in the abdominal cavity is a serious mistake. It is only a pabulum for micro-organisms when present. The fluid can not be removed by sponges at all thoroughly, and flushing is the only procedure to follow. After flushing, dry the abdominal cavity by means of sponges or by means of a suction syringe, or both.

When this is done the cavity will be in as nearly a normal condition as it is possible to make it under the circumstances.

The insertion of a large glass drainage tube to the bottom of the pelvis is for the purpose of removing any fluid collecting there.

The patient being placed in Fowler's position, the fluid can not go elsewhere than in the pelvis. As a rule, there is but little fluid to remove after all of the salt solution is out.

The drainage tube or gauze is removed as soon as possible, depending on the amount of fluid and the nature of the organisms present at the time of operation.

Fecal fistulas are not pleasant nor to be desired by either the patient or the surgeon, but do not give much trouble, and usually close spontaneously.

I am deeply indebted to Dr. A. Leteve[3] for the interest shown in making many microscopic examinations and cultures of the abdominal fluid. This procedure is very necessary. It aids in the after-treatment, and it also aids in making a more certain prognosis.

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Medicine as a science and as an art ranks higher than it has ever done. Physicians and surgeons win victories over disease and death of which our predecessors never dreamed. We have progressed and the future holds for us even better things. Let us have done with the prevailing pessimism; it is an infection which has been sown into our ranks from the ranks of unbelievers. We know better things of medicine than they and we must not let the unbelief of an outside few deter us in our onward and upward march.—*Western Medical Review.*

THE EXTRACTION OF THE INTRACELLULAR TOXIN OF THE COLON BACILLUS,

WITH A PRELIMINARY STATEMENT CONCERNING ITS PHYSICAL AND CHEMICAL PROPERTIES.

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INTRODUCTION.

The large tanks for the growth of bacteria in mass in use for some years in the hygienic laboratory of the University of Michigan permit the collection of bacterial cell substance in large amount and thus afford opportunity for the study of cellular chemistry not obtainable in any other way. Already several researches along this line have been carried on in this laboratory, and recently Dr. Vaughan has published his theory of the composition of bacterial cells and the principles of immunity developed from these studies. It is the purpose of this paper to detail some of the work which has been done recently in the extraction of bacterial intracellular toxins, with special reference to the toxin of the colon bacillus, and to give some preliminary statements concerning its physical and chemical properties. The method for the extraction of the toxin has been followed repeatedly and with several species of bacteria, so that now it can be given as reliable in results, and it is believed suited for general application.

EXTRACTION OF TOXIN.

The details of the method for extracting the bacterial intracellular toxins may be stated as follows: The organism to be studied is grown on 3 per cent. agar on the large tanks for from ten to fourteen days at room temperature. When the tanks are kept at 38 degrees centigrade, a shorter time may suffice to give the best yield. When the growth has ripened, the layer of bacterial substance is detached from the agar with glass rakes and drawn into flasks by means of suction pumps. Should the growth be too dry to be removed in this way, sufficient 95 per cent. alcohol is added to permit the suspended germ substance to pass into the flask. The flasks are emptied into large precipitating jars and the germ substance washed several times with 95 per cent. alcohol by decantation. It is then covered with absolute alcohol, and is allowed to stand for several hours with frequent stirring, when it is collected on a filter and all the alcohol is allowed to drain off thoroughly. Prolonged contact with absolute alcohol hardens the cell substance and renders the subsequent extraction of the toxin difficult. The cellular substance is now placed in large Soxhlets and extracted with ether, after which it is air dried, pulverized and weighed. The process thus far is preparatory. As obtained in this manner the dry germ powder kills guinea-pigs in doses of 1 to 40,000 body weight within twelve hours.

The germ substance, thus purified, is boiled for one hour on the water-bath, under a reflux condenser, with from fifteen to twenty-five times its weight of absolute alcohol, in which 2 per cent. by weight of pure sodium hydrate had been previously dissolved. It is essential that the alcohol used in this extraction should be absolute, and that every trace of water in the germ substance should be removed before the extraction of the toxin is undertaken. If this point be neglected the toxin will be obtained in a sticky, gummy mass which does not give satisfactory results. By this process the germ

substance is divided into two distinct parts. From the golden brown alcoholic solution there is obtained a powder representing about one-third of the weight of the original dry germ powder, which is very toxic, killing guinea-pigs in small doses in about thirty minutes, while the residue insoluble in alcohol represents about two-thirds of the weight of the germ substance and is not poisonous. The germ substance does not yield all its toxin, as a rule, until the extraction with sodium hydrate in alcohol has been repeated at least three times. Boiling the germ substance thus with sodium hydrate in alcohol splits the cells along certain definite lines of cleavage, for when the extraction has been repeated several times, boiling for one hour at each extraction, it will be found that all the toxin is dissolved in the alcohol, that no more can be split off, and that the portion insoluble in the alcohol is now non-toxic. After these portions have been separated by filtration, the filtrate, which contains the toxin dissolved in absolute alcohol, and is alkaline in reaction, is neutralized with hydrochloric acid. This throws down practically all the base and acid as sodium chlorid, which is removed by filtration. There is thus obtained a solution of the toxic part of the germ cell in absolute alcohol. This is evaporated in vacuo at a temperature of 40 C., redissolved in absolute alcohol to get rid of remaining traces of sodium chlorid and again evaporated in vacuo at 40 C. The toxic part of the cell substance obtained in this way, provided there is no water present, forms a brown scale on the dish which may be pulverized to a brownish powder that is toxic in very small doses.

It is believed that this poisonous substance is an integral part of the bacterial cell split off from it by the alkali, and that it is a synthetic product formed by the germ during its growth. In order to demonstrate this point the colon germ was grown for seven days in flasks containing Fraenkel's modification of Uschinsky's medium of the following composition:

Water	10,000 parts.
Sodium chlorid	50 parts.
Asparagin	34 parts.
Ammonium lactate	63 parts.
Di-sodium hydrogen phosphate	20 parts.

After a week's development the contents of the flasks were poured into from two to three volumes of 95 per cent. alcohol. The precipitated substance was filtered out and put into absolute alcohol. Filtered from this it was extracted in Soxhlet with ether, then dried and powdered. From this germ substance the process for the extraction of a poisonous body with 2 per cent. sodium hydrate in absolute alcohol was carried out as given above. On concentration of the alcoholic solution there was obtained a poisonous body just as from the extraction of germ substance grown on agar. The same dose kills guinea-pigs in thirty minutes, with characteristic symptoms of colon toxin. Also, the toxin obtained from germ grown on Fraenkel's modification of Uschinsky's medium gives all the proteid color tests hereafter described as being obtained from colon toxin from agar-grown cultures. This demonstrates the fact that the toxic body is an integral part of the germ split off from the cell by alkali; and in consideration of the apparent proteid nature of the toxic part, set forth in detail subsequently, it is evident that the bacterial cell must synthetically produce this proteid body during its growth from the chemical compounds of the medium.

PROPERTIES OF THE CRUDE SOLUBLE TOXIN.

The poison split off from the cell substance by the method above given is designated as the crude soluble toxin; "crude" because it is undoubtedly a mixture of a number of substances, and "soluble" in contradistinction to the germ substance from which it has been obtained and which is insoluble.

The brownish toxic powder from the colon bacillus is very hydroscopic and dissolves freely in water, forming an opalescent solution, acid in reaction, and pale yellow to golden brown in color, according to its strength. The opalescence is removed by filtration through a hardened filter, but the toxicity of the solution is not thereby diminished, showing that a small but non-toxic part of the powder is insoluble in water, but the larger part is so freely soluble that for practical purposes the opalescence may be disregarded. On neutralizing the opalescent solution with sodium hydrate it becomes clear; on neutralizing with sodium bicarbonate, a brownish non-toxic precipitate is formed, small in amount, and when this is removed by filtration the solution obtained is clear and highly toxic. In absolute alcohol the solution is perfectly clear. After long standing in an absolute alcohol solution, there is a small part that settles out and becomes insoluble; also, after repeated evaporation to dryness and resolution in absolute alcohol, a small part each time becomes insoluble. The powder is insoluble in ether, chloroform and petroleum ether. Each of these will remove a very small amount of fatty substance, which is non-toxic, but they do not dissolve an appreciable amount of the poison. The powder is soluble in strong mineral acids, remaining clear on being boiled and on diluting with water. A few drops of mineral acid, however, added to a water solution, causes a precipitate. This would seem to indicate that the acidity of the water solution of the toxin is caused by the presence of some organic acid.

Although the toxic powder is so readily soluble in absolute alcohol, the tests point to the presence of an albuminous or proteid body. Practically all the proteid color reactions are obtained, with the exception of Molisch's test. It is interesting, too, that the part separating out from an alcoholic solution on long standing gives none of the proteid color reactions, indicating that the proteid part is permanently soluble in absolute alcohol. The Millon's reaction shows most perfectly, even in dilute solution, as does also the biuret test. Heated with strong nitric acid a clear pale yellow solution is formed, which, when ammonia to excess is added, turns to a deep orange color, thus giving the xanthoproteic test. The reaction of Adamkiewicz is positive, for when the substance is heated with acetic acid and sulphuric acid is added, a beautiful violet color develops. On boiling with concentrated hydrochloric acid, to which a drop of concentrated sulphuric acid has been added, the powder passes into solution and a violet color results, thus giving Lieberman's test. The reaction of Adamkiewicz is supposed to be referable to the presence in the proteid molecule of aromatic groups, together with a carbohydrate radicle, while Lieberman's reaction is conceded to depend on the formation of furfurol, and, although the toxic substance gives both these reactions perfectly, it does not respond to Molisch's test, which is given by the formation of furfurol on the splitting up of a carbohydrate group with sulphuric acid. Neither does the powder reduce Fehling solution, either directly or after boiling with dilute mineral acid.

The ordinary test for sulphur in proteids, that of heating with excess of sodium hydrate in the presence

of a small amount of the acetate of lead—is not given by the portion of the germ split off by alkali in absolute alcohol. If, however, a portion of the substance in a test tube is fused with metallic sodium, and the cooled mass treated with water, a few drops of a freshly prepared solution of sodium nitroprussiate added to part of the clear filtrate, give a beautiful violet color, indicating the presence of sulphur. Also, if the other part of the clear filtrate be treated with a lead acetate solution and acidified with acetic acid, lead sulphid is precipitated. If the solution is acidified before lead acetate is added a faint but unmistakable odor of hydrogen sulphid is detected. It is known that sulphur may exist in the albuminous molecule in at least two forms, one part being readily split off on heating with dilute alkalies as hydrogen sulphid, the other being obtained only when the destruction of the proteid molecule is carried much farther. Since the nitroprussiate reaction is very delicate, no conclusion as to the amount of sulphur can be drawn from this test, and although a good precipitate of lead sulphid is formed, the amount of sulphur is probably not large, since Leach, in this laboratory, failed entirely to find sulphur present in the ash of the colon bacillus. It may be of interest to note parenthetically that both the germ substance and the residue which remains after extraction of the toxin, respond to the nitroprussiate test for sulphur, and also give the lead sulphid precipitate in the clear acidified filtrate from the fused mass.

A solution of the toxic substance is not coagulated by heat in acid, neutral or alkaline solution, though, as already stated, a few drops of a mineral acid causes the appearance of a considerable precipitate which is not soluble on heating or on the further addition of acid. This precipitate is produced regardless of whether or not the opalescence of the water solution is first removed.

Among the metallic salts, copper sulphate produces no precipitate and ferric chlorid only on heating. Silver nitrate naturally precipitates any trace of chlorids present, but after the addition of an excess of ammonia there still remains a small precipitate. Potassium ferrocyanid gives a precipitate, also potassium bismuth iodid in acid solution. Lead acetate, mercuric chlorid, and platinum chlorid all produce heavy precipitates. These latter precipitates have been examined more in detail and will be referred to again.

From a water solution of the powder, bodies giving proteid reactions may be salted out by the addition of ammonium sulphate or sodium chlorid to saturation, but on the removal of the neutral salt from the filtrates, these filtrates still respond to the proteid color tests. In the case of the salting out with ammonium sulphate, the precipitate shows little physiologic effect, whereas the residue from the filtrate, after removal of the ammonium sulphate, is still toxic and still gives the proteid color tests.

NO EVIDENCE OF ALKALOIDAL BODY IN CRUDE SOLUBLE TOXIN.

Phosphotungstic, phosphomolybdic and picric acids all give abundant precipitates. Since these reagents are also used in the precipitation of alkaloidal bodies, the precipitates with phosphomolybdic and phosphotungstic acids were further examined, the possibility suggesting itself that the toxic body might be alkaloidal in nature and that the proteid part might be entirely separate from the poison. A sample was precipitated with phosphomolybdic acid in acid solution, the precipitate removed, washed and dissolved in ammoniacal water. This solution was then shaken with amyl alcohol. The alcohol was not colored and the residue obtained on concentration was so slight as to be practically nothing. Another sample was precipitated with phosphotungstic acid, the solution being acid in reaction. The precipitate was allowed to settle, removed by filtration, washed with acidulated water, decomposed with a saturated solution of barium hydrate and the remaining insoluble part filtered out. So far as possible the barium was removed from the filtrate with carbon dioxid, alternating with concentration and further addition of carbon dioxid. The solution was then allowed to concentrate to dryness, when the residue was dissolved in absolute alcohol, leaving barium salts behind. On concentrating the slightly opalescent solution, more barium salts came down during the process and were filtered out. The dry residue was taken up in water and ammonium carbonate used to precipitate the barium that still remained. After removing the barium carbonate, by evaporating on the water bath, both carbon dioxid and ammonia were expelled, the solution again becoming acid. Dryness being reached, absolute alcohol was once more used, leaving undissolved a small amount of inorganic material. In this way the final residue after evaporation of the alcohol was practically freed from inorganic impurities. Sulphuric acid no longer gave a barium precipitate in water solution. The amount obtained by this method was very small and an exceedingly small part of the original toxic powder used. Since the substance obtained in this way still gives good Millon's, biuret and xanthoproteic proteid reactions, it is fair to say that it is not alkaloidal. The very small amount obtained by this method was given a guinea-pig intra-abdominally and, though the animal was sick, it did not die. Either phosphotungstic acid does not precipitate the toxic body or else the amount obtained was less than a fatal dose.

Should the toxic powder contain an alkaloidal body existing as a salt in the acid solution, the possibility of extracting the base with ether or chloroform after the solution had been made alkaline with ammonia, is apparent. This was tried with negative results. To a water solution of the toxin, acid in reaction, ammonia was added, drop by drop, to a slightly alkaline reaction, the mixture shaken with ether, the ether separated and evaporated. The residue left was non-toxic. The ammoniacal water solution was next shaken with chloroform, the slightly colored chloroform drawn off and evaporated at low temperature, leaving a small amount of a dark, thick semi-liquid, which was non-toxic either as it was or after faintly acidifying with hydrochloric acid. The water solution remaining being still toxic; it is evident that the toxic part is not an alkaloidal body capable of being extracted directly.

Potassium bismuth iodid in acid solution of the crude soluble toxin produces an abundant precipitate, apparently more or less soluble in excess. This precipitate is soluble in ammoniacal water. On shaking with amyl alcohol so small an amount of substance is extracted as to be practically nothing.

Lead acetate produces a heavy precipitate which settles readily. The Millon test is given by the filtrate in this case and not by the precipitate. After removing the lead from both parts by means of hydrogen sulphid, both solutions were concentrated to a thick syrup. The residue from the filtrate still gave the Millon test, while that from the precipitate did not.

The residue from the filtrate was toxic for guinea-pigs, that from the precipitate was not, showing that lead acetate does not precipitate the toxic part. A determination of nitrogen by the Kjeldahl method in the toxic residue from the filtrate showed 9.90 per cent.

A saturated water solution of mercuric chlorid produces in a water solution of the poisonous powder, acid in reaction, an abundant rather curdy or fibrous-looking precipitate of a brownish color, but here again the proteid reactions are given by the filtrate and not by the precipitate and again after the mercury has been removed by hydrogen sulphid, the residue from the filtrate is toxic, that from the precipitate is not.

Platinum chlorid gives a good precipitate in both water and alcoholic solution of the crude soluble toxin. The alcoholic precipitate is perhaps the more abundant. It has been found that from 10 to 15 per cent. of the crude poison is thus precipitated. The precipitate is insoluble in water, hot or cold, acid, alkaline or neutral in reaction, in alcohol, ether, chloroform or acetone, so, naturally, all attempts to crystallize it failed. It gives the Millon test perfectly, also the biuret and xanthoproteic reactions. These tests are not given by the filtrate or by the residue from it after removal of the platinum by hydrogen sulphid. The precipitate after removal of the platinum is very toxic, having twice the toxicity of the crude poison.

As has already been stated, that part of the germ split off by alkali in alcoholic solution and designated as the "crude soluble toxin" is undoubtedly a mixture of substances. At present it is not known whether the toxic part itself is a single chemical compound or not. There is no evidence that it is an alkaloidal body, and it is interesting and it may be significant as well, that wherever the toxic part is found the proteid color reactions are given also. Another apparently constant factor is the acidity of the poisonous body. In places where, by precipitations, washings and purifications, there is no chance for any trace of inorganic acid used to remain, this acidity of the toxic part still remains, e. g., when the toxin has been precipitated by platinum chlorid in alcoholic solution, the precipitate carefully washed with alcohol, the platinum removed by hydrogen sulphid and the clear resulting solution concentrated to dryness on the water bath, the very toxic residue remaining is still acid in reaction.

TOXIN BROKEN UP WITH CONCENTRATED HYDROCHLORIC ACID.

Assuming the compound nature of the toxic substance and the possibility of splitting off therefrom a less complex toxic group, the effect of breaking up the crude poison by prolonged heating with concentrated hydrochloric acid was tried. Samples of the toxin were heated on a boiling water bath for five hours with from 20 to 30 volumes of concentrated hydrochloric acid. Practically everything was dissolved, the solution being very dark brown, almost black. This solution, after filtering, was neutralized with sodium carbonate and evaporated to dryness on the water bath, when the residue was thoroughly extracted with absolute alcohol, forming a pale yellow solution. This, on the addition of a saturated alcoholic solution of mercuric chlorid, gave a heavy white precipitate which, after thoroughly washing with alcohol, was dissolved so far as possible in boiling water, the precipitate being difficultly soluble in a large amount of hot water and leaving an insoluble part. The clear solution was concentrated on a water bath and from it were obtained sheaf-like aggregations of rather long, narrow, fragile-looking prisms. These were filtered out, put into water, and the mercury removed by hydrogen sulphid. On evaporation there remained a small amount of a brownish residue, acid in reaction again and very toxic, the symptoms produced resembling those given by the crude soluble toxin. It is known also that this residue dissolved in alcohol gives a precipitate with alcoholic platinum chlorid. Work is now in progress in the preparation of both the mercury and platinum compounds in quantities sufficient for their study and identification.

CONCLUSION.

Briefly, then, there is split off from the germ substance of the colon bacillus by treatment with a 2 per cent. solution of sodium hydrate in absolute alcohol a crude soluble toxin, leaving undissolved a residue which is almost completely soluble in water but which is not poisonous. That a definite cleavage takes place is shown by the fact that the germ substance is split so decidedly into two distinct and different parts, a point being reached where no more toxin can be split off, thus leaving an inert residue. The toxin is obtained whether the germ be grown on agar or on Fraenkel's modification of Uschinsky's medium, demonstrating that it is an integral part of the cell. The use of the modified Uschinsky's medium shows also that the organism is able to build the toxin synthetically from chemical compounds.

This poisonous substance, freely soluble in water, but more readily and perfectly in absolute alcohol, gives all the ordinary proteid color reactions, but does not yield a reducing carbohydrate. There is no evidence that it is alkaloidal in nature, the toxic part being precipitated directly by platinum chlorid alone, with the probable exception of phosphotungstic acid, and in both these cases the toxic body obtained still gives the proteid reactions. It may be broken up by concentrated acid, and a toxic crystallizable body precipitated by the use of mercuric chlorid.

The cell substance of typhoid and anthrax bacilli, as well as that from the colon bacillus, is broken up by dilute alkali in alcohol at 78 degrees, into portions A and B, the former being in solution in the alcohol while the latter forms an insoluble residue. Both A and B are soluble in water and aqueous solutions of A are poisonous, while similar solutions of B are inert or relatively so. Portion A from the colon bacillus, at least (the others not having been so thoroughly studied as yet), can be divided into two portions, *a* and *a'*, by precipitation with platinum chlorid. Portion *a* constitutes from 10 to 15 per cent. of A and is poisonous, while *a'* is inert. The proteid color reactions follow the poisonous portion in these separations. By breaking up portion A with concentrated hydrochloric acid, a crystalline toxic body is obtained.

The relation of these poisonous, alcohol-soluble proteid derivatives to similar substances obtainable from other proteids, also their relation to the alcohol-soluble proteins obtained by Osborne from seeds, are matters for further investigation.

A detailed study of the action of the poisonous portion on animals will be presented in a paper by a coworker in this laboratory.

Case Reports.—Every physician sees instructive cases not duplicated in the experience of others. If he does not report them, remarks the editor of the *Medical Council*, their lessons are lost to medical science.

LOCAL ANESTHESIA IN MAJOR AND MINOR OPERATIONS ON THE EAR,

AS OBSERVED IN PROFESSOR POLITZER'S CLINIC IN VIENNA.

GEORGE PAULL MARQUIS, A.M., M.D.
AND
OSCAR H. KRAFT, M.D.
CHICAGO.

During our term of service as clinical assistants in Professor Politzer's clinic we had the opportunity to observe and to study the various methods of applying local anesthesia in otology.

Although the Schleich and other solutions from time to time had been used with various degrees of success, it remained for Neumann, assistant to Professor Politzer, successfully to develop a method of local anesthesia, by means of which almost any operation can be performed on the ear without more than passing inconvenience to the patient.

Neumann first tried this method in the case of a strong Hungarian—a coal miner by trade—who had suffered for years with a chronic otitis media. In this

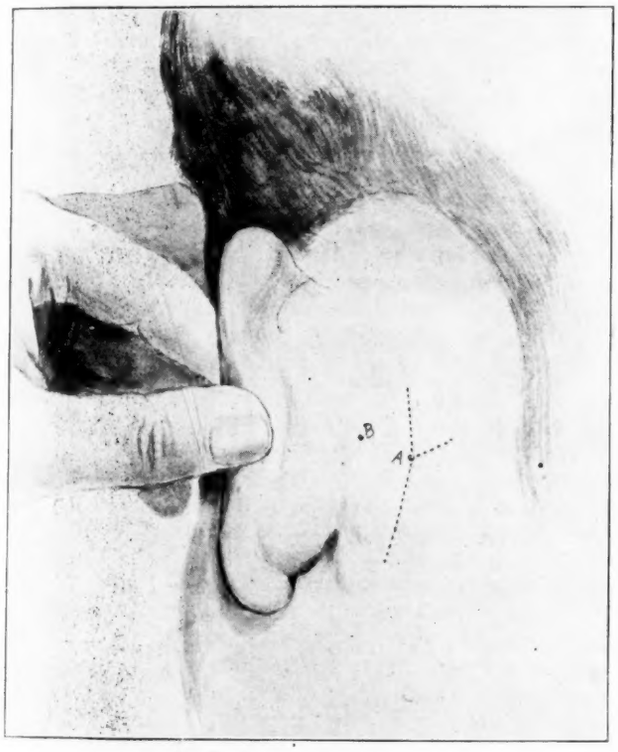

Fig. 1.—Showing the point of injection.

case he injected 7 c.c. of a 1 per cent. solution of cocain with five drops of tonogen[1] to each c.c. of the solution, and the result was most astonishing. A radical operation, lasting over an hour, was performed, according to Zaufal's method, without the slightest manifestation of pain on the part of the patient. Encouraged by the success of the anesthetic in this case, a number of operations were performed, and the technic was modified and improved from time to time till the present method was developed.

Preparatory to the operation, the patient is given a meal, as experience has shown that cocain is much less toxic when the patient has partaken of a meal shortly before its injection. The patient is then prepared as for any surgical procedure; the region of the ear is shaved, rubbed with ether, scrubbed with green soap, then washed with bichlorid solution 1:1,000. This is repeated twice, after which the part is again rubbed with ether.

The injection of the solution is best made with the patient in a sitting position, but if preferred, it can be done with the patient lying on the side.

The following three solutions should have been previously made:

(*a*) One per cent. solution of eucain in distilled water with five drops tonogen to each c.c.

(*b*) One per cent. solution of cocain in distilled water with five drops tonogen to each c.c.

(*c*) Solution of cocain, 20 per cent.

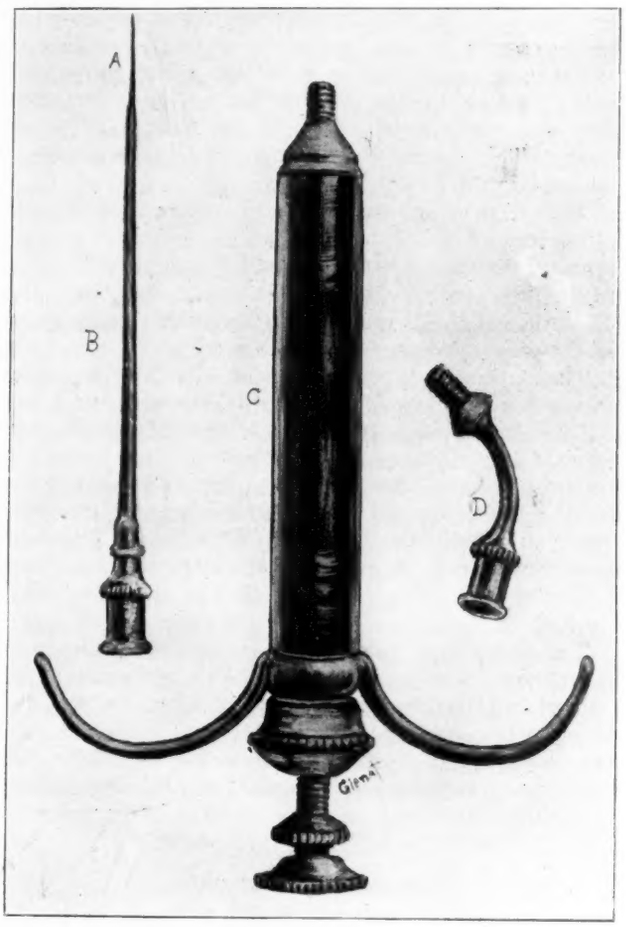

Fig. 2.—Syringe used in injecting the solutions. The arm d which unites the needle b and the syringe c allows the syringe and the hand of the operator to be below the line of vision. The point of the needle a is easily detachable so that the new points can be inserted from time to time.

The operator now fills the syringe with the eucain-tonogen solution, and places it in hot water until it is warmed to the temperature of 40 to 50 C. This is essential, as the anesthesia is more rapidly completed if injected at this temperature.

An assistant now takes the place of an anesthetizer and watches the pulse, pupils and general condition of the patient; he remains in this capacity during the entire operation.

SITE AND METHOD OF INJECTION.

The needle is now inserted over the mastoid process

1. This is an extract of the adrenal gland made in Austria and is similar to the various adrenal preparations of this country.

at the point "a," Figure 1, and forced upward through the tissues till it reaches the bone, when 1 c.c. of the eucain solution is injected beneath the periosteum.

The syringe is now refilled and the needle inserted through the same opening. This time, however, the direction being downward and the point carried in the region of the apex of the mastoid process where 1 c.c. of the solution is injected beneath the periosteum. The syringe is again filled with the eucain solution, and the needle inserted in the same opening and directed inward and somewhat backward.

The external ear is now drawn forward and 1 c.c. of the solution is injected between the anterior wall of the mastoid process and the cartilage of the ear at the point b, Figure 1.

A speculum is now inserted in the ear and 1 c.c. of the cocain solution is injected into the superior wall of the ear at the point of junction of the bony and cartilaginous portions. Another syringeful is injected into the inferior wall, and one-half syringeful each into the anterior and posterior walls. The injections must be made beneath the periosteum, and in such a manner that a protrusion of the wall can be seen following them. This protrusion will disappear as absorption takes place.

A small pledget of cotton is now saturated with the 20 per cent. cocain solution and is inserted into the tympanic cavity through the perforation in the tympanic membrane, which always exists in these cases. This pledget is not removed until the antrum is opened in the regular course of the operation.

The parts are now covered with a bichlorid dressing which remains in place until the operation is begun. All in all, not more than 4 or 5 cgm. of eucain and 3 cgm. of cocain are used, combined with the vessel contracting and antitoxic tonogen. Eucain is made use of in this connection, as the toxic properties of this drug are very much less than those of cocain. The latter drug, however, is injected into the auditory canal, as its action persists longer, thus allowing the operator to work in the antrum and attic with perfect freedom.

The symptoms following the injection are never alarming. As soon as the injection is completed, the patient is placed in a recumbent position, either in bed or on the operating table, and the assistant who takes the place of the anesthetizer continues to observe him. In a few minutes he may complain of slight headache or nausea, both of which are overcome with a few spoonfuls of hot black coffee with a little brandy.

THE RADICAL OPERATION.

After from 15 to 20 minutes, the anesthesia and anemia for the radical operation are complete, and one may begin as in any radical mastoid operation. Only small pieces of bone should be removed at a time, and the chisel should be held as flat as possible, thus avoiding the concussion which would ensue if the chisel were held perpendicularly. If preferred, the burr may be used in this operation with very good effect.

A pillow placed under the head of the patient also aids in reducing the jar to a minimum.

The patient feels that something is being done in this region, but has no symptom of positive pain. The only exception to this may be in the initial cut through the skin, which some of our patients claimed to have felt. Nervous subjects are sometimes apprehensive when they feel the jarring caused by the first hammer strokes, but after a few minutes even this disappears and they suffer no greater inconvenience than when undergoing treatment at the hands of the dental surgeon.

We are convinced that with the possible exception of children and hysterical subjects nearly every patient can be operated on by this method, and that in a great majority of cases a general narcosis can be dispensed with.

OTHER OPERATIVE PROCEDURES.

The procedure previously described is for the radical operation, but the efficiency of the anesthesia is by no means limited to this class of cases. In acute mastoiditis, which frequently demands operative interference, we find that by this method the operation can be painlessly performed without subjecting the patient to the danger of a general anesthetic.

In injecting the solution in these acute cases, the same technic is followed as for the radical operation, so far as it concerns the posterior auricular region; it is not necessary, however, to inject any cocain into the auditory canal. When there is subperiosteal abscess, the fact that the subperiosteal space is filled by the abscess interferes with the absorption of the solution.

We now turn our attention to those cases known as the intratympanic cases. This operation, although a relatively minor one, has always demanded a general anesthetic. Rather than run the risk of anesthetizing a patient twice, operators have generally chosen to perform the radical operation at once, thus ignoring the possibility of curing the condition by removing the ossicles, which he could easily have done had he been in possession of an efficient local anesthetic. By this method the extraction of polyps, granulations, endotympanal pseudoligaments, and even resection of the lateral wall of the attic, which has already been performed by Professor Politzer, may be made office operations.

As this method of anesthesia reduces the extraction of the malleus and incus to a minor operation, and at the same time allows the operator to thoroughly examine with the sound those parts of the ear which formerly it was not possible to examine, we believe that a more complete agreement as to what constitutes the indications for a radical operation will result.

We have performed many operations of this kind, in cases of chronic otitis media, with attic or antrum suppuration, or with partial or complete destruction of the drum, in which the malleus and incus were removed without any pain to the patients—a number of whom were children. In these cases a single injection of the cocain-tonogen solution was used, and even in the children there was not the least sign of any toxic symptom following the injection of the solution.

THE INTRATYMPANIC OPERATION.

The technic of the intratympanic operation is as follows:

The ear is cleansed with deodorized benzine and washed with hydrogen peroxid or lysol solution. The syringe is then filled with the 1 per cent. cocain-tonogen solution and warmed to 45 C. The speculum is now introduced in the ear and the needle inserted into the superior wall at the junction of the bony and cartilaginous portions. The needle is forced in until it reaches the bone, when a few drops are forced out of the syringe. The needle is then pressed cautiously forward and more of the fluid injected beneath the periosteum. In this procedure care must be taken that the needle is not forced through the cutis, or the fluid will

escape into the auditory canal. Should this occur, the injection must be repeated two or three times until the covering of the superior wall bulges downward, showing that sufficient fluid is retained.

The syringe is cautiously withdrawn and a small pledget of cotton saturated with tonogen is pressed against the field of operation. After waiting from ten to fifteen minutes to allow the anesthetic to take effect, the operation can be performed without the slightest inconvenience to the patient.

On the completion of the operation, the field is dusted with a mixture of equal parts of anesthesin and boracic acid to counteract the severe pain which would otherwise develop in an hour or two following the operation. This indication is fully met by this powder, as in the cases where it has been used the patients have not complained of any pain subsequent to the operation.

The syringe used for these injections is of metal, holding 1 c.c.; and with a needle modified by Neumann. A pair of half rings (which are detachable) have been added to the syringe to facilitate the injection.

In conclusion, we wish to express our gratitude to Professor Politzer and his assistants for the exceptional opportunities afforded us for study during our term of service in the clinic at Vienna.

PUS TUBES IN THE MALE, AND THEIR SURGICAL TREATMENT.

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Due attention is not generally accorded to the fact that the genital duct proper in the male—seminal vesicle, vas deferens and epididymis—is just as prone to suppuration as is the urethra. Suppuration in the vesicle, it is true, has been recognized, in recent years, as a frequent feature of gonorrhea; but the extension of this infection to the epididymis—frequent and familiar though it be—is not generally considered a suppurating process. Even the best of our modern treatises expressly state that suppuration is exceptional in epididymitis, gonorrheal or other; they consistently prescribe the usual medical treatment, but do not advise the evacuation of pus, except in those rare cases in which fluctuation becomes distinct.

The pus infections of the epididymis and of the vas deferens present a complete though neglected analogy with the familiar pus infections of the fallopian tubes. An epididymitis following prostatic pus infection, whether gonorrheal or other, is usually suppurative; pus tubes are quite as common in the male as in the female; hence the rational treatment of such acute epididymitis should frequently be surgical, i. e., it should include the evacuation of pus by incision.

In the mildest cases such incision may be needlessly radical, since the pus may presently find the natural channel into the urethra; on the other hand, the acute hydrocele and the scrotal edema, which so often accompany severe acute epididymitis, are infallible signs of suppuration in the epididymis, and the incision is followed by relief from pain and subsidence of the swelling. Even when no pus escapes, the relief of tension affords marked comfort and insures a relatively speedy convalescence.

If direct exit for the pus by incision into the epididymis be not provided, the gathering pus often burrows along the vas into the urethra; and thus is explained the familiar phenomenon that decrease of the pain of epididymitis is accompanied by marked increase in the discharge from the meatus. Moreover, persistent suppuration in the epididymis may feed the gleet which follows, just as pus-tubes in the female feed a leucorrhea; and this gleet may recur indefinitely, in spite of elaborate urethral and internal medication, until the hard and tender swelling of the epididymis is incised and the contained pus evacuated.

In other words, the successful treatment of a gleet sometimes requires incision into the epididymis.

Again, chronic epididymitis through pus infection may require surgical treatment; persistent pain and tenderness following the acute infection (sometimes miscalled neuralgia of the testis) is relieved by incision or excision of the epididymal pus focus; destruction of the testis by extension of the pus infection from the epididymis may be prevented by the same treatment.

The lower end or tail of the epididymis presents the chief swelling in acute or chronic epididymitis (pus infection), since in this tail is coiled the greater portion of the 20 feet of the epididymal tube; and into this lower end the incision usually should be made. Simple puncture with bistoury or aspirating needle may sometimes suffice; yet drainage is better assured by an incision a half inch or more long, the edges of the pus cavity being loosely stitched to the cut edges of the skin, and a small drain inserted.

In a few cases I have practiced a therapeutic measure which, according to my present information, is novel, namely, injections into the vas deferens and seminal vesicle, through a needle introduced into the vas just above the epididymis. As the dilated upper extremity of the vas, the ampulla, bears about the same relation to the vesicle that the auricle does to the ventricle of the heart, a liquid injected into the vas easily reaches the vesicle; this can be clearly demonstrated by injecting Prussian blue in water into the vas of the fresh subject.

The therapeutic value of such injection is not yet accurately determined; at present it can be merely affirmed that this is a practicable way—and as yet the only way—for directly medicating the male genital tube, including the vesicle, which is so commonly and so persistently infected by various pus bacteria and by the gonococcus.

Special Article

IMMUNITY.

CHAPTER XIII.

THE BACTERICIDAL PROPERTY OF SERUMS.

The Cellular and Humoral Theories.

There are two theories of note which concern the ability of the body to destroy bacteria. One of these is the phagocytic theory of Metchnikoff, according to which micro-organisms can not be destroyed without the direct or indirect participation of the phagocytic cells; this is the cellular theory. The second, the humoral theory, supposes that the power resides in the fluids of the body alone; in its improved form it now holds that antibacterial immunity should be considered cellulo-humoral, and that whatever bactericidal power the body fluids have is derived primarily from the body cells. Many who appreciate the action of the serum, however, also believe that phagocytic cells may take up and, in certain instances, destroy micro-organisms; this combined view seems best to fit the facts as known at present.

Antibacterial, bactericidal and bacteriolytic are three terms which are used in a rather loose, interchangeable way, although they are not strictly synonymous. A bactericidal serum is one which is able to kill bacteria, as the term implies; if at the same time it dissolves the organisms it is bacteriolytic. Inasmuch as some serums do kill bacteria without dissolving them (typhoid), while others have the dissolving power (cholera), the distinction is one of significance. In either case the serum is, of course, antibacterial. For lack of a more concise English term, bacteriolysis is used to designate the process in which bacteria are killed by serums regardless of the dissolving power of the latter. Bacteriolysin refers to the substances of the serum which accomplish this action. The means of determining the bactericidal power of a serum was indicated in a previous chapter. Bacteriolysis is best observed with the organism of cholera and its antiserum as described later under the title of the Pfeiffer experiment.

Bacteriolysis and Bacteriolysin.

Bacteriolysins are far more complex than antitoxins, agglutinins and precipitins. One may best appreciate the present situation by briefly tracing their history as they were evolved from the relatively simple alexins of Buchner.

Following the investigations of Fodor, Behring and others, which showed that normal blood may kill bacteria in the test-tube, and after additional facts were obtained by Nuttall, Buchner demonstrated that it was not necessary to use the full blood in order to obtain the bactericidal action, but that the serum alone had a similar effect. He spoke of the antibacterial substances collectively as alexins (substances which ward off), taking the reasonable view that natural immunity to bacteria depends on their presence.

Alexins.

Alexins were very sensitive substances; they disappeared spontaneously from serums in a few days, were destroyed by a rather low degree of heat (55° C.), by acids and alkalies, and were active only in the presence of certain salts, especially sodium chlorid. A striking feature of alexins, as distinguished from chemical bactericides, was their marked selective action on bacteria. The alexins of animal A might destroy one micro-organism readily and affect another little or none at all, whereas those of animal B might have opposite selective characteristics. The increased bactericidal power of serum which develops during immunization or infection, goes hand in hand with the increased resistance of the individual against the infection. The alexins have undergone a specific increase; they are now immune alexins or, as we say to-day, immune bacteriolysins. The new alexins are identical in their properties with those which occur normally; they exist merely in greater concentration in the acquired immunity.

Selective Action.

Work which was instituted by Pfeiffer and developed further by others led the way to a more correct understanding of the nature of alexins. Pfeiffer studied the bactericidal action of serums in the body of the living animal, i. e., in the peritoneal cavity. His most classic results were obtained with the organism of cholera. Guinea-pigs are immunized against this microbe by injections of the killed or living organisms. We have already learned of this process as that of active antibacterial immunization. When the animal is well immunized the experiment is begun by the injection of a quantity of culture which would be fatal to an unimmunized animal. At intervals during the next twenty or thirty minutes small amounts of the peritoneal fluid are removed for microscopic examination. In order to obtain the fluid, fine pipettes are drawn out in the flame, an incision is made in the skin, and the abdominal wall is then punctured with the pipette; the fluid flows into the tube by capillary attraction. A portion may then be examined in a hanging-drop preparation or dried on a cover-glass, fixed in the flame and stained with a dilute solution of carbol-fuchsin. In the hanging-drop preparations it is first noticed that the organisms have lost their motility; the comma- and S-shaped forms soon become spherical and at first appear swollen and clear, whereas in later preparations they gradually decrease in size and show a very rapid vibrating movement, the so-called Brownian movement, which is purely physical in nature. In the course of from twenty to thirty minutes the organisms have been completely dissolved. These changes may also be followed in the stained specimens, in which the altered cells eventually appear as fine red granules.

The Phenomenon of Pfeiffer.

As Metchnikoff, Bordet and others have shown, the same phenomenon may be followed without the intervention of the animal body, by mixing perfectly fresh anti-cholera serum with the vibrio and mounting as a hanging-drop preparation. The slide must be kept at the temperature of the body by means of a warm stage. The reaction, however, is far less vigorous than when it takes place in the peritoneal cavity and the solution of the cells may not be complete. No bacterium is so completely dissolved under these conditions as the vibrio of cholera, although the typhoid bacillus and similar organisms undergo some changes in their form.

The Experiment in Vitro.

The experiment of Pfeiffer may also be conducted in the abdominal cavity of a non-immune guinea-pig, if anticholera serum is injected in conjunction with the organism (passive antibacterial immunization). This is the classic Pfeiffer experiment. The immune serum should be of such strength and should be given in such quantity that the animal is saved in spite of the ten fatal doses of culture which the typical experiment demands. Experiments brought to light a condition which seemed paradoxic; an old immune serum which had lost its bactericidal power as manifested *in vitro*, or one in which the alexins had been destroyed by a temperature of 60° C., showed its original protective power when the experiment was performed in the peritoneal cavity. Furthermore, when an inactive immune serum was injected into the cavity, allowed to remain for a time and then withdrawn, its bactericidal power for experiments *in vitro* was found to be re-established. On the basis of these facts, Pfeiffer concluded that the specific substance is present in the immune serum in an inactive form, and that it becomes active as a result of contact with living tissue cells, supposedly the endothelial cells of the peritoneum. According to this conclusion, an inactive serum could become active again only after its introduction into the body.

The Activation of an Inactive Serum by the Tissues.

It remained for Bordet to show, on the contrary, that the serum could again be made active for experiments in the test-tube without the aid of living cells. This he accomplished merely by adding to the heated immune serum a small amount of fresh normal serum from the guinea-pig or goat, the quantity of normal serum which was used not being in itself bactericidal. We have, then, two serums which when combined are bactericidal, but when separated are inactive. The destruction of the active property of a serum by heat or by other means is called inactivation, and the re-establishment of its power by the addition of fresh normal serum is reactivation. The immune serum, when heated to 55 to 60° C., loses something which is essential to its activity, and this something may be replaced by the normal serum. That the substance in the normal serum is identical with that which was destroyed in the immune serum is indicated by the fact that it is destroyed by the same degree of heat; a heated normal serum will not reactivate an immune serum.

Inactivation and Reactivation.

The conclusion of Bordet that the bactericidal power of a serum depends on the combined action of two substances has been substantiated by numerous investigators. The properties of the two substances will be given in the succeeding chapter. At this point it is sufficient to say that these are the substances which in recent years have become familiar under the names of amboceptor and complement and their various synonyms. One of them, the

Two Substances in a Bactericidal Serum.

amboceptor, is heat-resistant (thermostabile), i. e., it is not destroyed at 56° C., whereas the other, the complement, is susceptible to heat (thermolabile), being destroyed at that temperature which killed the alexins of Buchner. The term alexin is still applied by some writers to the thermolabile substance (complement), but its original significance has been lost.

Specificity.

The specificity which prevails among antitoxins and agglutinins is found also in the action of bactericidal serums. When an anticholera serum is injected into the peritoneal cavity of a guinea-pig, protection is not afforded against other vibrios or other pathogenic organisms. The specificity is so great that the reaction of Pfeiffer may be used for the identification of bacteria. If one has in hand an unknown vibrio, its identity or non-identity as the organism of cholera may be determined by injecting it, in conjunction with anticholera serum, into the peritoneal cavity of a guinea-pig; if the microbe is transformed into granules it is the vibrio of cholera, otherwise it is not. Other bacteria may be identified in a similar manner by the use of the proper serums. In spite of this high specificity the group reaction may occur even with bactericidal serums. An antityphoid serum may have a stronger bactericidal action than a similar normal serum against organisms which are closely related to that of typhoid, as the colon bacillus, but the power is never so strong as against the typhoid organism. Hence, for the purpose of identifying bacteria, the method of serum dilution is as decisive as in connection with agglutination.

Group Reaction.

Bactericidal serums are not obtained with equal readiness for all organisms. We are most familiar with those which are yielded by immunization or infection with the microbes of cholera, typhoid, plague, the colon bacillus and related bacteria. Many other bacteria yield neither antitoxins nor bactericidal substances through immunization, nor are the serums protective when injected into animals; the pneumococcus, streptococcus, tubercle bacillus and others. Individuals who have suffered infections from these organisms are endowed with little or no immunity against subsequent attacks. The pneumococcus grows well in the serum of a convalescent from pneumonia. Thus it is seen that the field of antibacterial immunity is filled with many contraindications if one attempts to interpret it merely on the basis of the bactericidal properties of serums as they are manifested *in vitro*.

The Effect of Bactericidal Serums on Endotoxins.

In a preceding chapter micro-organisms were divided, first, into those which secrete soluble toxins, immunization with which causes the formation of antitoxins, and, second, those which do not secrete such toxins and for which no manipulations of cultivation and immunization known at the present time are successful in stimulating to the formation of antitoxins. After all, it seems plain that the bacteria of the second group must be pathogenic because of toxic substances which they carry with them into the body. In view of the fact, however, that they do not secrete soluble toxins in culture media, it is held that their toxic properties are integrally associated with the bacterial protoplasm; they are the endotoxins spoken of previously.

The question naturally arises: Does a bactericidal serum in dissolving or killing its homologous organism at the same time neutralize the endotoxin? On the basis of very positive experiments which have been performed, especially by Pfeiffer, it is evident that the serum has no such action. In the experiment of Pfeiffer, one may inject into the abdomen a sufficient quantity of anticholera serum to kill all the organisms which have been introduced, and yet the animal dies with the intoxication of cholera. Furthermore, if one considers a culture of the cholera vibrio, which has been killed by heat, as representing so much cholera toxin, anticholera serum protects against no more of it than does the same quantity of normal serum. It is believed that anticholera and similar immune serums may even increase intoxication by dissolving the bacteria and thus liberating an excess of toxins.

In spite of the classification of bacteria into the two groups just cited there are a few microbes which, according to manipulation, cause the formation of either an antitoxic serum or a bactericidal serum. In general it may be said that the character of the serum depends on the bacterial constituent which is used for immunization. If the diphtheria bacillus itself, or the pyocyaneus bacillus, is injected, the toxin having been washed away, bactericidal serums are formed, whereas if toxins alone are introduced, antitoxins are the result.

The Bactericidal Power in Relation to Natural Immunity.

In view of the fact that the increased bactericidal power of the serum of one who has had typhoid fever, cholera or one of the other diseases in this group, is so distinctive and so potent, it is generally believed that the immunity depends on this factor. May we with equal justification conclude that the bactericidal powers of normal serums are correct indices of the natural antibacterial immunity of the animals? Although this relationship has been found to exist in a number of cases, there are other instances in which it does not prevail. Anthrax may be cited as an example; *in vitro* the serum of the rabbit is strongly bactericidal for the bacillus although the animal is exceedingly susceptible; on the other hand, the dog has much more resistance to anthrax although its serum has but slight bactericidal effect on the organism. Experiments of some importance have to do with the ability of bacteria to absorb the homologous bactericidal substance from a serum when the two are mixed in test tubes. Hence, if natural antibacterial immunity depends on the bacteriolysin which is present in the circulation, a large mass of the bacterium when injected intravenously should absorb or fix the bactericidal substances; as a consequence, serum which is drawn later should show a great decrease in its bactericidal power for the organism which was injected. Although results of this nature have been obtained by a number of competent investigators, they are not without exception. In the same connection fatal infections should be accompanied by a decrease of the natural bactericidal power of the serum for the organism involved. This has been found to be true in man in relation to plague, and in some animal infections. At present general statements concerning this point can not be well made.

Origin of Bactericidal Substances.

We have little positive knowledge concerning the organs which form the bactericidal substances in acquired immunity. Pfeiffer and Marx, in relation to cholera, and Wassermann in typhoid, found that the spleen and the hemopoietic organs in general contain the immune bodies in greater concentration than the blood serum, and in immunization experiments the bodies may be demonstrated in these organs at a time when they are absent from the circulation. This fact is generally accepted as proof of their formation at these points. Wassermann and others have demonstrated the presence of complement in the leucocytes, and Metchnikoff holds that it is produced only by such cells.

Standardization.

The standardization of bactericidal serums is at present more of theoretical than of practical interest, because of their limited therapeutic use. Their values can not be determined with the same degree of accuracy with which one measures the unit of antitoxin. One may deliver from a pipette a definite quantity of toxin and if the toxin has been well preserved the same quantity may be obtained at any subsequent time. It is impossible to preserve a culture of living bacteria so that the number of the organisms and the virulence of the culture remain constant, nor will two cultures made at different times contain the same number of cells in a given volume. Hence, standard cultures which are necessary for the systematic valuation of serums are not easily available. One may use a definite volume of a bouillon culture of an organism which has grown for a certain number of hours, but in all likelihood no two cultures would contain the same number of organisms.

Pfeiffer uses the normal loop which has been mentioned, i. e., one which will take up from a surface of agar two milligrams of the bacterial mass. The culture must have grown for a definite period, eighteen to twenty-four hours. Tests having some value may be made in the test-tube, provided the antibacterial serum is used when perfectly fresh, i. e., when its complement has not yet degenerated; this, of course, gives one only the bactericidal power as it is manifested outside the body, and, as stated, this may not be a correct index of the protective power of the serum when it is injected into the living animal. For the test-tube experiment various dilutions of the serum are made, as 1 to 10, 1 to 100 and 1 to 1,000, and a similar quantity of each dilution is mixed with a given mass of the culture; the mixtures are then placed in the thermostat for a number of hours. At the end of this time plate cultures are made from each of the mixtures, the plates put aside for twenty-four hours, and the colonies which have developed are then counted. The quantity of serum required to kill all the bacteria used may thus be determined.

When the protective power of the serum is determined by animal experiment it is not essential to use the serum when fresh; in fact, the native complement in the immune serum may be disregarded, or, preferably, it may be destroyed by heat. If the latter procedure is adopted, or if an old serum is used in which the complement has degenerated, its reactivation is accomplished through the complement which is present in the body of the experiment animal. It will appear in more detail in the succeeding chapter that a given antiserum requires a particular complement for its reactivation, and that this complement may be present in some animals and absent in others. Hence, it must be known in advance that the animal chosen for the experiment possesses the suitable complement.

It is also necessary to know the virulence of the culture with which the antiserum is to be tested. It is possible to maintain some organisms at a rather constant virulence by passage, i. e., infecting animals with the microbe and recultivating it from the tissues. With others, abundant controls must be made at the time the serum is tested in order to know at that moment the precise virulence of the culture. In all probability it requires more serum to protect against very virulent cultures than against those of less virulence.

To find the value of anticholera serum Pfeiffer prepares dilutions similar to those mentioned above, and to the same quantity of each dilution adds ten fatal doses of a virulent culture of the vibrio of cholera. These are injected into the peritoneal cavities of three guinea-pigs and after periods of forty to sixty minutes hanging-drop preparations are made from the peritoneal fluid of each animal to determine the formation of the characteristic granules; the highest dilution which causes this change in the cells stamps the value of the serum. The animal must at the same time be protected against the ten fatal doses of the culture.

The value of an antityphoid serum may be determined in the same way, the result being judged by the protection which is afforded the animal rather than by the formation of granules. Antityphoid, antiplague, and some other serums are also tested by injecting the serum twenty-four hours in advance of the culture.

Non-Specific Increase in Resistance.

In contrast to the specific immunization which may be accomplished with an immune serum, it is important to recognize that a non-specific increase in resistance may be caused by the injection of a number of substances, which in the test-tube have no destructive action on the bacteria. Issaeff injected into the peritoneal cavity such substances as bouillon, tuberculin and sterile urine, and found the resistance of the animals increased to peritoneal inoculation of virulent organisms. Normal serum has a similar effect, but, in this instance, the bactericidal substances of the serum may be of influence. Supposedly, this non-specific resistance is local, and it appears to depend on the attraction of an increased number of phagocytes and of additional complement to the peritoneal cavity. The suggestion recently made that preceding laparotomy nucleinic acid be injected into the abdominal cavity, in order to increase the local resistance, has its foundation in the experimental work just cited.

(To be continued.)

Clinical Notes

DIPHTHERIA ANTITOXIN IN THE TREATMENT OF GOITER.

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During the summer of 1903 I had occasion to treat a family with diphtheria; one patient died from the laryngeal form after tracheotomy had been performed and large doses of antitoxin had been administered. An aunt acted as a nurse; she had exophthalmic goiter, with all the classic symptoms. No immunizing dose of antitoxin was given her, and she was infected with moderately severe pharyngeal diphtheria. I immediately injected 1,500 units of antitoxin and repeated the dose on the following day, combined with local antiseptic and internal supportive treatment, with the result that at the end of the week she was convalescent.

Four months later I saw this patient and noticed that the large tumor of the neck had disappeared, and that the eye symptoms were a trifle better. She stated that since the attack of diphtheria the goiter had grown smaller to such an extent that she noticed the muscle lines of the neck. Her pulse rate became normal and the muscular twitchings and nervousness ceased. She is the only person I ever heard of who confessed to being glad she had had diphtheria. The case was of eight years' duration. One year has now elapsed with no return of the tumor. Since then I have had two cases of goiter, with the following experiments with diphtheritic antitoxin:

CASE 1.—Miss T., aged 22; simple goiter; no eye symptoms; disease of six years' duration. Her father died of heart disease.

Examination.—She was robust, had no anemia, but was very nervous and had palpitation of the heart. Pulse was regular, 90; no heart lesion. Tumor measured 33 cm.

Treatment.—July 16, 1904, I injected 2,000 units of antitoxin. July 25, 1904, I repeated the dose.

Result.—The pulse dropped to 85, tumor measured 32 cm. and she felt better. August 10, pulse 80, tumor 32 cm.; no palpitation or nervousness. A week later pulse was 72, but there was no apparent reduction of the tumor. I lost track of the case on account of removal of the patient. Four months later a friend of hers informed me that the tumor was nearly gone. She never complained again of her condition, and could button her collar bands easily on account of their looseness.

CASE 2.—Mrs. E., aged 35, had exophthalmic goiter of a pronounced type and of two years' duration, but worse during the past four months. No family history of goiter.

Examination.—She complains of being tired and is very nervous, with accentuated muscular twitchings. Pulse soft, 120; she is anemic, has a heart murmur, ankles are swollen and there is albuminuria. Tumor measured 35 cm. and there was a loud bruit.

Treatment.—July 18 I administered 2,000 units antitoxin and on July 28 repeated the dose; pulse 82.

Result.—August 8, pulse 80, tumor 33.5 cm. She felt stronger, there was no palpitation, the muscular twitchings were controlled and heart symptoms improved. At this visit I asked her to purchase more antitoxin, but she could not, on account of the expense. Five months later she stated that she felt perfectly well and that she was able to do her housework and to perform other duties which she had been unable to perform before treatment. On examination I found the tumor very much decreased, over half the parenchyma having disappeared, leaving a bunch of pulsating vessels that felt like a

varicocele. The eye symptoms were much improved, the muscular twitchings had disappeared and palpitation of the heart had been experienced but once since the treatment.

Remarks.—Whether the direct toxins from the diphtheritic infection in the first case were the cause of such a splendid result, or, as one author claims, goiter at times recovers on its own accord, is a question. If the former is the case, then this is a discovery which will bear further investigation. If the result was due to antitoxin, then my experiments with the above cited cases prove it. One thing positively demonstrated is the fact that the cardiac symptoms and muscular twitchings were markedly improved and that there was also a great reduction of the parenchyma of the tumor. This may have a bearing on the pathology of goiter as a microbic origin.

In conclusion I wish to state that the reduction of the tumor is greatly noticeable after from three to five months, the other symptoms being noticed much earlier.

LATERAL CURVATURE IN AN INFANT ELEVEN MONTHS OLD.*

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PHILADELPHIA.

Patient.—Sarah D., aged 11 months, was brought to the medical dispensary of the Children's Hospital, in Dr. J. Madison Taylor's service, Jan. 4, 1905.

Family History.—The father is living and well. The mother is living, but suffers from endometritis, and is of a nervous disposition. She has been married ten years and in that time has had four miscarriages, three premature births and two full-term infants.

History.—The child was born at term, after an easy labor, lasting one hour; no forceps were used. The child had no deformity at birth. She was fed exclusively on breast milk until six months old, and since then, besides the breast milk, she has been given milk and crackers, meat broth and mashed potatoes. With the exception of an attack of enteritis when six months old the child has never been ill. Since then she has not been so well nourished and she has not gained so rapidly in weight as formerly, and occasionally she has had green stools. The mother denies all history of traumatism, says the child has never had convulsions, nor has she ever been, even temporarily, paralyzed. She says that she carries the child as much on one arm as on the other.

Present Condition.—Ten days ago, while giving the child a bath, the mother noticed for the first time that the right side of the infant's back was much more prominent than the left. The deformity is not any greater now than when she first noticed it. The mother says that the child is otherwise in good health, and that there are no subjective symptoms. At times the child is inclined to be constipated.

Physical Examination.—The patient is a poorly nourished infant with a muscular development below par. Its present weight is 13¾ pounds. The infant is pale and anemic, but there are no visible signs of rachitis. It has three teeth. The condition of the back is most striking; there is a very decided right primary dorsal scoliosis, with rotation of the bodies of the vertebræ, and secondary compensatory lumbar and cervical curves. This lateral curvature is of the third degree; that is, the spine can not be straightened either by suspension, extension, lying or by pressure. There is no inequality of the lower extremities. There is apparently no pain or tenderness on pressure over the spine. There is no wry-neck.

Treatment.—The mother is made to carry the child in the position which tends to correct the deformity. Massage, electricity and passive motion are employed three times a week. Cod-liver oil is given internally.

* Exhibited before Philadelphia Pediatric Society, Jan. 10, 1905.

A GAUZE-RUBBER SPONGE.

EVERETT MINGUS, M.D.
MARSHFIELD, ORE.

Flat gauze sponges lined on one side with thin rubber tissue such as is used for a dental dam, or preferably thinner, are of special value and afford great protection against soiling the abdominal cavity with escaping contents of the hollow viscera and other infective material during operations in this region. When a coil of intestine is brought out for the purpose of anastomosis or similar work which involves the opening of its lumen, there is considerable danger of the contents passing through an ordinary sponge packing and infecting surrounding structures. The chances for this unfortunate accident to occur are greatly minimized, if not wholly prevented, by the use of gauze sponges lined on one side with rubber, the rubber side being placed down. The rubber forms a positive barrier against infective material going completely through, as is liable to occur with an ordinary gauze packing. A sponge of this make is also serviceable in operations on the biliary tract where there is liable to be a copious escape of bile which would oversaturate and pass through ordinary gauze packing. The same use may be made of it in the pelvic cavity. By properly disposing these sponges a bowl or cup is formed which will effectually catch any deleterious material escaping from the scene of the operation. If one is careful in removing the sponge to make traction on all sides equally so as to lift it directly upward nothing will escape around the edges of the rubber; or in the construction of the sponge the rubber tissue may be cut wider than the gauze and be brought up over the edges and thus secure a perfectly non-penetrable sponge.

Rubber-lined sponges, besides having all the advantages of ordinary sponges for walling off, possess additional value in that the rubber coming in contact with the intestines and other organs does not cause irritation. Frequently rough and hasty methods of packing gauze around and between inflamed intestines is responsible for the destruction and removal of their serous coat and for subsequent adhesions. By loosely tacking the rubber tissue to the gauze with a running stitch it can be removed and used in the making of new sponges.

GALL BLADDER THROUGH FORAMEN IN LIVER.

J. C. O'DAY, M. D.,
OIL CITY, PA.

Mrs. S. was referred to me by Dr. John Hadley. The diagnosis of gallstones was made and operation was advised. The patient and her friends agreeing, the operation was performed at the Oil City Hospital, Feb. 16, 1905. Entering the peritoneal cavity, the fundus of the gall-bladder was found to be transmitted through a foramen in the liver. The lower margin of the foramen was about one-half inch from the thin edge of the liver, under which edge the gall bladder is usually found. I have never seen nor heard of such a formation before.

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THE FUNCTION OF THE THYMUS.

Of the four chief "ductless glands," the thyroid, adrenal, hypophysis cerebri (pituitary body) and thymus, in only the first two has their function been understood through the isolation of a definite internal secretion. As to the function of the hypophysis and the thymus we are still very much in the dark. Beyond its relation to acromegaly we still know little concerning the former, and even this relationship is by no means so well defined as might be desired. In the thymus we have an organ quite different from the other three, which are all typical epithelial glands, since it presents the peculiarity of being both an epithelial and a lymphoid organ, with the lymphoid tissue preponderating. In the past few years there has been a considerable growth in the interest taken in the thymus, corresponding with the general advance in the study of the ductless glands and their secretions, but we are still far from any final conclusion as to its real function. By far the greater part of all experimental work has given results of a negative character. Repeated attempts to demonstrate an internal secretion by the methods used in the study of other organs have failed. To be sure, some slight effects on blood pressure have been noted, but nothing of any real significance.

The obvious relation of the organ to infancy and childhood naturally suggests an intimate connection with the phenomena of development—the thymus reaches its maximum size at the second year, remains little changed until puberty, and then rapidly atrophies. Nevertheless, numerous experimental removals of the thymus from young animals have failed to show that it is in any way essential for the phenomena of growth, or, for that matter, that it is at all essential for the life of the animal. Fischel,[1] whose report is the latest, could observe no definite influence on the development or health of young animals deprived of the thymus, nor did rickets occur; the healing of fractures went on as in normal animals; other observers have found no change in calcium metabolism after thymus extirpation. Assuming that the thymus must have a function, it would seem that it must be one that is either not essential for life, or else that it can be vicariously accomplished by other organs. One of the few positive results has been obtained by Paton,[2] who claims to have observed an earlier development of the testicles in young animals deprived of the thymus, although no particular changes could be detected in the females.

Pathologic observations have so far done practically nothing toward explaining the problem of thymus function—when diseased it seems to cause no symptoms beyond those due to mechanical factors. Possibly the marked atrophy of the thymus that occurs in marasmus and wasting conditions in children, first described fully by Ruhräh and recently corroborated by Dudgeon,[3] may indicate some influence of the thymus on nutrition, but it seems equally probable that the thymus atrophy is entirely a secondary process, depending on the causes that produce the other phenomena of infantile marasmus. Histologic studies have so far given us perhaps the most valuable positive information, starting with the observations of Mauer and Beard. The former found evidence that the lymphoid tissue is not derived from the mesoblastic structures that surround the epithelial cords of the embryonic thymus, as had been generally believed, but that the lymphoid cells are derived directly from the epithelial cells. Beard corroborated this, and, finding that the leucocytes did not appear in the fetal blood until after the lymphoid tissue had developed in the thymus, considered this organ as the original source of the leucocytes. This was an extremely revolutionary idea, that epithelial cells could be the parents of supposedly mesoblastic structures, such as the lymph glands and the leucocytes, and has not been readily accepted—nevertheless more and more evidence seems to be pointing in the same direction.

One of the latest sources of confirmation lies in the study of the tonsil by Wood.[4] The tonsil is of all organs most closely related to the thymus in structure, for in both the essential arrangement is a mass of lymphoid tissue surrounding columns or crypts of epithelial cells, which in both cases are developed from the lining of the upper part of the alimentary canal. In agreement with the observations on the thymus, Wood found evidence that the lymphocytic and lymphoid elements of the tonsils are derived from the epithelium both in fetal and in adult life. This being the case, it is also possible that in the whole gastrointestinal tract the epithelial crypts dipping into lymphoid tissue may be a source of leucocytes derived from epithelium; in this connection may be mentioned that the puzzling plasma cells, with their intimate relations to connective tissues on the one hand and to leucocytes on the other, are found particularly in the intestinal submucosa. This is a fascinating idea, that leucocytes may be formed from epithelium, for it upsets many fixed conceptions; but on the other hand it must be said that many earlier observations have hinted at the same thing, so it is really not so revolutionary as it may at first seem. Reverting again to the question of the function of the thymus, it may

1. Zeit. f. exper. Pathol. u. Therap., 1905, vol. i, p. 388.
2. Journal of Physiology, 1905, vol. xxxii, p. 28.
3. Trans. Path. Soc. of London, 1904, vol. lv, p. 151.
4. Univ. of Penn. Med. Bull., 1904, vol. xvii, p. 246.

be concluded that, as the evidence stands at present, the chief office seems to be that of a leucocyte forming organ during fetal and infant life, this function perhaps disappearing later because of development of other lymphoid organs with similar function; everything so far speaks against the idea that the thymus produces an important soluble internal secretion, like the thyroid and adrenal, or that it is so essential to life as are these organs.

THE EFFECT OF THE ENTRANCE OF AIR INTO THE VEINS.

The fact that the entrance of air into the veins may lead to serious consequences was first observed by Heyden, late in the seventeenth century, but it was not until 1818 that the first authentic record of this accident in man was reported by Beauchêne. Since then the matter has been of great interest, particularly to surgeons and to obstetricians, as most of the reported cases have resulted from operative procedures, especially in the neck, or from the injection of foreign substances into the uterus.

There can be little doubt, as Welch remarks, that many of the cases reported as death from air embolism are based on entirely insufficient evidence. The researches of Welch and Nuttall, and later of Welch and Flexner, on the *Bacillus aerogenes capsulatus* made it very evident that in future all reports of air embolism must show that the possible action of this gas-forming organism was excluded. Especially in cases of so-called air embolism following uterine manipulation, the evidence, in most instances, favors infection rather than the introduction of atmospheric air. Still, all doubtful cases excluded, there can be no question that the introduction of air into the veins does in some instances cause alarming symptoms and sometimes death.

There seem to be certain etiologic conditions which must be present in order to allow air to enter the veins. As Delore and Duteil[1] have recently stated, the accident is a rare one, whereas the mere cutting of even large veins is very common. The entrance of air is most apt to occur after injury to the large veins at the base of the neck in the so-called "dangerous zone of Bérard." The danger is not confined to this region, but when it occurs elsewhere there is generally some pathologic change in the vein, either a thickening of the wall or infiltration of the surrounding tissue, which renders it less likely to collapse if opened. Then, too, a condition of anemia seems to favor the entrance of air, so that the accident is more apt to occur at the end of an operation when the patient has lost blood. The quantity of air introduced is of importance, and the old idea that a few small air bubbles were dangerous has been abandoned. The rapidity with which the air enters is also a factor not to be neglected.

1. Rev. de Chir., vol. xxv, No. 3, 1905. Abstracted in The Journal, April 22, 1905, p. 1321.

The symptoms which are produced by the entrance of the air into the heart are quite characteristic. Sometimes a sucking sound is distinctly heard at the site of injury, sometimes this is not apparent. The patient is effected immediately, if not under general anesthesia he often utters a cry of anguish, and almost immediately becomes unconscious. The face is pale and livid, the pupils dilated and fixed, the pulse feeble and irregular. In a few of the reported cases auscultation of the heart has been practiced immediately after the accident, and a distinct churning bruit has been detected over the right side of the heart. In some cases foamy blood has been forced from the cut end of the vein. Death often occurs in seven or eight minutes in such cases, but may be delayed for hours. A few patients have recovered.

The phase of the matter which has led to most discussion is the pathogenesis. Why should the mere entrance of air into the veins cause death? Some have held that death is due to cerebral disturbances from blocking of vessels in vital areas by the air bubbles, but this is unlikely, as the air does not usually get into the general circulation. Others have claimed that there is a mechanical arrest of the right heart from overdistension, just as the bladder may be paralyzed from overdistension. The theory most widely held is that of Couty, who believes that the right heart becomes paralyzed, since the mixture of air and blood which it contains can not be forced on because of its compressibility. Passet and Hauer, on the other hand, believe that the blood and air are driven on and cause death by multiple emboli of the pulmonary capillaries. Recently François-Franck has advanced the hypothesis that the air bubbles pass into the coronary vessels, especially the veins, and that the heart stops beating on account of an acute anemia of the myocardium. It is quite possible that all these factors, as Welch suggests, may enter into the causation of the symptoms. Whatever the solution, the fact remains, and must be taken into account especially in operations at the base of the neck.

ANAEROBIC BACTERIA IN GANGRENOUS SUPPURATION.

In the routine examination of pathologic material for bacteria very little emphasis, as a rule, is given to the detection and isolation of anaërobic organisms. This may be due to the very prevalent idea in medicine that the anaërobes, barring two or three rare forms, are of practically no importance in the production of pathologic lesions, and also to the fact that the cultivation of anaërobes is considered a complicated and difficult procedure. For a number of years past the French, especially, have called attention to the important rôle that this class of organisms plays in many of the most common affections in which the ordinary pus bacteria are thought to be exclusively concerned. Beginning with the work of Veillon,[1] and followed by the researches of

1. Veillon, XIII Internat. Med. Congress, Paris, 1900.

a number of investigators, much important information has been added to our knowledge of putrid and gangrenous suppurations and to the part played by anaërobic organisms in these processes.

It is a not uncommon observation in appendiceal and periuterine abscesses, liver abscesses, putrid pleurisies, mastoiditis, putrid placental infections and the like to find few or no organisms in aërobic cultures, yet smears of the pus show bacteria present, and often bacteria with an entirely different morphology from those seen in the aërobic cultures. In such cases, pyogenic cocci and colon organisms are often obtained and the whole process is attributed to their presence. Anaërobic cultures, however, often show a very abundant flora present, and this is especially true in those instances in which fetid and gangrenous suppuration occurs. Infections caused by pneumococci, streptococci or staphylococci alone are practically odorless, but in infections in which are found anaërobic organisms there is, as a rule, a marked fetid odor. In fact, Rist[2] says, from his studies of putrid pleurisies, that there never occur fetid or gangrenous processes without the existence of strictly anaërobic bacteria. It is of prime importance, therefore, in all cases where there is present this fetid pus, to make anaërobic as well as aërobic cultures if a complete bacteriologic analysis is desired.

A number of varieties of anaërobic organisms are usually found in such cases and many are found with some degree of constancy in certain classes of infections. That these anaërobic organisms are not simply ordinary saprophytes playing a secondary rôle in connection with other aërobic pathogenic bacteria but are really pathogenic in themselves is supported by numerous facts. In the first place, anaërobes are often in preponderating numbers in these cases of suppuration and, as has been stated, are constant. Again, it is not uncommon to find cases of gangrenous suppuration in which anaërobes are present to the exclusion of all aërobic germs. Most conclusive of all is the experimental production of gangrenous processes by the inoculation of pure or, better, of mixed cultures of anaërobes. In this way, typical lesions are produced, and a microscopic study of these lesions leaves no doubt, according to Rist, that they are produced by the anaërobic organisms injected.

As to the origin of suppuration of this character and the manner in which it occurs, there are many suggestive facts. It is known that the mouth and throat, the intestine, the genital canal in woman, the preputial space in man, also the biliary duct, are the seat normally of large numbers of anaërobic organisms, as well as aërobic, and it seems a remarkable fact that, as a rule, the former are more uniformly pathogenic than the latter and only require such conditions as traumatisms, placental retentions, calculi, some previous aërobic infection or even general weakness and emaciation to set up a fetid gangrenous process. Thus gangrenous processes in the lungs, noma, suppuration in the middle ear and the like may be caused by anaërobic organisms found commonly in the mouth and throat and which from here have found their way to these places. Gangrenous appendicitis is due to anaërobes from the intestine. The putrid infections of the female genital canal are caused by this same class of organisms normally existing in the vagina, which are ever ready to take advantage of favorable conditions for development. Many more examples might be given.

From a practical point of view, evidently, the treatment for such cases must consist in the thorough use of oxidizing agents, such as hydrogen peroxid and permanganate of potash, and as free exposure to the air as possible.

Such facts as the above indicate the importance of a convenient and simple method of growing and isolating anaërobic organisms.

According to Veillon, tubes containing a column of glucose agar, 10 or 12 cm. in depth, serve the purpose excellently. A number of fluid agar tubes, after being boiled, are inoculated with successive dilutions of the material and thoroughly shaken; no vacuum is necessary. In the lower layers, anaërobic colonies will develop and these may be obtained by drawing them into a fine pipette, and they are then studied in pure culture. Certainly with such simple technic a much more careful study of anaërobes should be made, in both surgery and pathology, than is being done at present.

2. Bull. L'Inst. Pasteur, No. 1, 1905.

SOME PRACTICAL LIMITATIONS OF THE GRUBER-WIDAL AGGLUTINATION TEST.

The discovery of a new and valuable aid to diagnosis is sure to be followed by a period during which extravagant expectations are entertained regarding the universal applicability and accuracy of the new method. Sometimes a rapid extension of the method is followed by attempts at simplification and popularization with their attendant dangers. The psychologic disadvantages of a fair degree of success have often been pointed out and they are plainly apparent in this matter of the agglutination test for typhoid fever.

Speaking generally, the appearance of the property of agglutination in the blood serum of a typhoid fever patient is to be considered as a cardinal symptom of the disease. In constancy, this symptom surpasses all others, and in the long run it can be depended on with greater confidence than the isolation of typhoid bacilli from the blood. At the same time, recent experimental studies have shown that the test must be applied with understanding and that the results are not always susceptible of easy interpretation. A recent paper by Scheller[1] emphasizes this aspect of the situation.

In testing numerous samples of human serum for the purpose of typhoid diagnosis, Scheller has encountered

1. Centralbl. f. Bakt. Orig., 1905, 38, p. 100.

a number of anomalous cases, some of which are described in his article. This investigator seems to have recognized fully the multifarious sources of error in the technic of the determination and to have guarded against them with unusual care. The actual observations are therefore deserving of all confidence.

In general, it is true that when specific agglutinating serum and agglutinable bacteria are brought together the reaction manifests itself with progressive intensity. A serum, for example, that fails to agglutinate in a dilution of 1:40 during 15 minutes may produce complete agglutination in this dilution in two hours, and after a longer period may show complete agglutination in a dilution of 1:160. Scheller has found that this rule of progressive intensification is sometimes departed from and that the agglutinative value of a serum may be very low after 15 minutes and very high after a few hours, or may be high after a short period of action and may show little or no increase on long standing. Comparison of two sera after a brief period, therefore, may be wholly misleading as to the final vigor of agglutination. The relative potency of agglutination after 15 minutes' action may be reversed when the comparison is pursued for several hours.

A singular phenomenon was observed by Scheller in one case. A serum that produced complete agglutination in low dilution after 15 minutes at room temperature showed the ordinary progressive intensification on continued maintenance at room temperature, but the control specimen kept at incubator temperature not only showed no increase in agglutination, but exhibited a lesser degree of agglutination after two hours at 37° C. than did the other after 15 minutes at 20° C. It seems possible that in such a case the higher temperature may have brought into play certain inhibitive substances (agglutinoids?) in the serum which were not functional at the low temperature. Whatever be the real explanation of this unusual occurrence, it is evident that the negative result reached by the ordinary procedure of incubation might lend itself to a false diagnosis in the hands of the ordinary observer.

It has been found, further, by this investigator that "inhibition zones" occur in the sera of typhoid patients similar to those sometimes encountered in work with artificially produced immune sera. In these cases the lower dilutions of the sera produce no agglutination, while the higher dilutions have a positive effect. This phenomenon is generally attributed to the presence of agglutinoids which occupy the agglutinogenic receptors of the bacterial cell and thus block the road to the active agglutinins. The absence of agglutination in the usual low dilutions (1:10, 1:40) may therefore in some instances give rise to an erroneous interpretation. In general it must be admitted that the visible manifestation of the agglutinin-agglutinogen reaction, namely agglutination, is dependent only in part on the simple combination of the two substances concerned. It appears wrong to assume that intensity of combination and of agglutinization will follow a parallel course.

The practical conclusions to be drawn from these and from other recent investigations are for the most part such as do not need special elaboration. Not only do numerous opportunities for manipulative error present themselves in the selection, cultivation and use of the typhoid culture employed, but the liability to mistakes of interpretation is shown to be very large.

TRUTH AND POETRY CONCERNING URIC ACID.

XIV.

The failure of studies of uric-acid excretion in gout to throw light on the cause of the excess of uric acid in the blood has been made evident. It now becomes necessary to ascertain whether or not studies of the total nitrogen metabolism or researches on the total phosphoric-acid metabolism in gout give us any help in connection with the problem referred to.

Certain earlier studies on the excretion of urea in gout may be neglected since in the determination no attention was paid to the nitrogen intake; moreover, these earlier investigations yielded contradictory results, some of them indicating that the amount of urea excreted in gout is increased, others that it is diminished.

The researches of Schmoll,[1] in 1896, since confirmed by Magnus-Levy, Zagari and others, were among the first that attained to that degree of completeness which makes such studies valuable. Vogel had shown that the excretion of urea is often abnormally low in gout, but Schmoll brought the proof that, at certain periods, the gouty patient excretes less nitrogen than he ingests; in other words, that actual nitrogen retention occurs for a time. This retention is not permanent, however; later comes a period when the nitrogen excreted exceeds in amount the nitrogen ingested, when there is an actual nitrogen deficit. These periods of nitrogen retention and of nitrogen deficit alternate irregularly with each other.

The question at once arose, to what can these disturbances in nitrogenous metabolism be referred? The somewhat similar disturbances which occur in nephritis were thought of, but the explanations given for the conditions in that disease can scarcely hold in gout; in the latter, the urine does not necessarily contain albumin; and, further, the excretion of phosphoric acid, the first to be affected in nephritis, is not markedly altered. Magnus-Levy, however, advanced the view that, in the periods in gout when the total nitrogen excreted is increased, there is actual increased destruction of albumin, probably toxogenic, inside the body. In the periods of nitrogen retention he sees simply a convalescence from the former disturbance, times when the albumin destroyed is being rebuilt. Unfortunately for this view, the body weight during periods of nitrogen retention

1. Schmoll, E.: Stoffwechselversuche an einem Gichtkranken Ztschr. f. klin. Med., vol. xxix, 1896, 510.

does not increase as much as it should if albumin is formed from the nitrogen retained; indeed, the body weight may actually decrease during nitrogen retention. Many, with Zagari, will be inclined to regard the form in which the nitrogen is retained as an open question, assuming only that the organism is in some way or another trying to replace a nitrogen loss of the details of which we are also ignorant.

Certain other attempts to explain the nitrogen retention must be referred to. Schmoll rejected the hypothesis that it is due to uric-acid retention on the ground that the amount of nitrogen retained is far too great to be thus accounted for, and Hager's supposition that the nitrogen is retained, not as uric acid, but as adenin, may be similarly disposed of. An admirable metabolic research was made by Vogt[2] in 1901. He showed that the nitrogen retention is not explicable by an increase in albumin, for while the retention in one instance amounted to as much as 24.6 grams of nitrogen, the patient remained in phosphoric-acid equilibrium. Nor is it referable to the retention of total nuclein, for when nuclein was fed to his patient its phosphoric-acid content was promptly excreted, while the nitrogen excretion remained further than ever behind the nitrogen intake. He concluded, therefore, that the retention is at least partly due to purin nitrogen, the nucleins absorbed being split at once into phosphoric acid and purins, the excretion of the latter being delayed, thus indicating a high degree of sluggishness of purin metabolism in gout. Vogt admitted, however, that there are probably still other reasons for the nitrogen retention.

The most careful investigation of the phosphoric-acid metabolism in gout we owe to Kaufmann and Mohr[3] (1902), who first thoroughly examined the "phosphoric-acid balance." They undertook their studies in the hope that the results would help them to decide whether the loss of nitrogen at certain periods in gout is due to the breaking down of albumin or to the sweeping out of "slag," and whether the nitrogen retention at other periods indicates an increase of albumin or merely a retention of end-products. They have concluded that no single explanation of retention or deficit of nitrogen is valid; on the contrary, nearly all contradictions vanish, they think, if we assume that entirely different processes, increase and destruction of albumin on one side, retention and "sweeping out" on the other, may be going on in a variable manner in different individuals and in different phases of gout.

Having thus shown that the nitrogen-excretion alone is not a safe criterion for judging of the causes of the alteration in uric-acid excretion, they turned to the phosphoric-acid excretion. In 1901, Loewi had suggested that the behavior of the latter in gout indicates that uric acid is retained in the disease; in health, on a constant diet, he found a constant relation between uric-acid excretion and phosphoric-acid excretion, while in gout the quotient deviated from normal and indicated uric-acid retention. Kaufmann and Mohr, however, find the quotient to be within normal limits, and, further, call attention to the fact that phosphoric-acid excretion varies with the varying needs of the body for phosphoric acid. Accordingly, it is unsafe to use the phosphoric-acid excretion or its relation to uric-acid excretion as evidence for the view that the cause of the excess of uric acid in the blood in gout is uric-acid retention.

2. Vogt, H.: Ein Stoffwechselversuch bei akuter Gicht. Deutsche Arch. f. klin. Med., vol. lxxi, 1901, 21.

3. Kaufmann, M., u. Mohr, L.: Beiträge zur Alloxurkörperfrage und zur Aetiologie der Gicht. 3 Teil, Stoffwechselbeobachtungen bei 5 Gichtkranken Deutsche Arch. f. klin. Med., vol. lxxiv, 1902, 586.

THE CONFERENCE AT THE WISTAR INSTITUTE.

Anatomy in America has been making progress by great strides during the last decade. University after university has established a professorship of the modern type in this subject. Men of thorough scientific training, who give their whole time to the teaching and investigation of anatomy, have been appointed to the chairs. Well-trained assistants are being developed, and in many schools liberal budgets for equipment and supply and expense now are regarded as necessary and no longer as merely desirable. *The American Journal of Anatomy* offers a worthy medium for the publication of the researches of American anatomic workers. The outlook for anatomic science in this country, if we may judge by the immediate past, is promising; and the Conference of Anatomists held at the Wistar Institute of Anatomy in Philadelphia last week makes the future even brighter. The Wistar Institute, founded some years ago, was intended to house safely the old Wistar and Horner Museum, to add to that museum, and, in general, to further the interests of anatomy in Philadelphia and in America. Under the directorship of Dr. Jayne, the present state of the institute has been developed. The collections already accumulated have been adequately cared for and several phases of the museum side of the foundation have received the attention they deserve. As far as the exhibiting side of the museum is concerned it is a model for other institutions to follow. On the retirement of Dr. Jayne, the directorship was accorded to Dr. Wm. G. Greenmann. The new director suggested to General Wistar, who is the principal donor, and to the other members of the board of managers, that some ten of the leading representatives of American Anatomy be invited to a conference at the Wistar Institute for the purpose of suggesting ways and means by which the institute can be made more helpful to the science of anatomy as a whole. This idea was favorably received and acted on and a conference was held the early part of last week. The detailed results of the proceedings have not been made public, but we understand that several important recommendations were made, among others the formation of a so-called "Central Institute" for neurologic, comparative anatomic and embryologic purposes, the collection and arrangement of donated specimens, the preparation of original material, the carrying on of active investigation along certain anatomic lines in the institute itself by

paid investigators of a high order, and the maintenance of a permanent advisory board composed of anatomists from various parts of the country. Should the authorities of the Wistar Institute decide to act on the suggestions offered, the influence of the institution is sure to be widely felt. Ultimately, of course, large funds will be necessary, but the income available at the present time is sufficient to permit of much good work in the directions indicated, and as new gifts accumulate the income will gradually be increased. It is matter for gratification to the medical profession of this country that the management of the institute has entered into this close relationship with the working anatomists of America. Anatomists can help the institute and the institute can help anatomy. We trust that the *entente cordiale* which has been established may be permanently maintained.

THE DANGERS OF SMALLPOX HOSPITALS.

The recent epidemics of smallpox in this country and abroad have strongly emphasized the value of vaccination and have also led to the restudy of various phases of this interesting disease. Among other aspects of the question, the relation of smallpox hospitals to the surrounding community has been reconsidered. The views of the profession on this subject have certainly not been unanimous. Excellent physicians have asserted that the isolated position usually chosen for such institutions is totally unnecessary, and that smallpox cases are no more infectious than cases of measles or scarlet fever. The recent statistics of Buchanan[1] show that this is not the case. This observer compared the house incidence of smallpox in houses within one and a half miles of the smallpox hospital with that in the remainder of the city of Gateshead. He showed that of the houses within a quarter of a mile of the hospital 82 per 1,000 were invaded, of those within half a mile 47 per 1,000, while in the rest of the city only 14 per 1,000 were attacked. Whether this was due to aërial conveyance of the disease, as Buchanan believes, or to contact infection from convalescents, which must be considered, the figures speak for themselves and indicate that the old plan should be adhered to.

ANTIRABIC INOCULATIONS AT THE PATIENT'S HOME.

It is possible that there are yet some who doubt the existence of rabies in man as a disease entity, and there may also be some who are still skeptical as to the utility of Pasteur's method of inoculation by means of attenuated virus obtained from the spinal cord of rabbits destroyed by means of a potent virus. Nevertheless, this method of treatment has demonstrated its efficacy and has been adopted, and institutes for its application have been established, in all civilized countries. It must be borne in mind that the treatment is not curative, but prophylactic, and that its success is the greater and the more certain the earlier it is instituted in the long period of incubation following the infecting wound, the object being to establish immunity before the development of the symptoms of the disease proper. It has been shown that when the treatment has been begun at once, the disease is invariably aborted, but the supposed necessity for having this done in an institute, often situated at a considerable distance from the patient's home and entailing at times a prohibitive expense, in many instances has prevented the employment of the procedure. It will be interesting, therefore, to know that this necessity no longer exists, and that the Pasteur Institute of the Department of Health of the City of New York, in addition to making antirabic inoculations itself, is prepared to send virus to a distance.

1. London Lancet, Feb. 4, 1905.

MEDICAL ASSOCIATION AGAINST WAR.

At a recent meeting of medical men in Paris, a very unique society was formed, the International Medical Association against War, whose object is to do away with war. The promoter is Dr. Rivière of Paris, who was elected the first president of the association. It is argued by the founders of the society that medical men, who are so intimately acquainted with human misery, both physical and moral, are by that very fact most fitted to collaborate in the great work of substituting arbitration for war. No mention is made as to how this association expects to carry out its work, nor where it will make a beginning. However, we venture to offer a suggestion, namely, that a most splendid opportunity presents itself for a maiden effort in Russia and Japan.

A CREDITABLE HOSPITAL REPORT.

The Central State Hospital of Virginia, under the superintendency of Dr. Wm. F. Drewry, presents a very creditable report for its last fiscal year. In this institution 1,334 persons with various mental disorders received careful individual treatment at an average per capita cost for the year of $89.11. (In this calculation there is excluded the cost of permanent improvements, insurance, etc.) The superintendent refers with just pride to the fact that not one patient "was subjected to any mechanical restraint," that "over 50 per cent. occupy unlocked rooms at night," and that "there has not been during the year a suicide, homicide or any gross violation of propriety." This speaks well for the assistants and attendants, as well as for the superintendent. Individualization in treatment is followed as far as possible. Tents are used for consumptives and a colony for epileptics, and all who are able engage daily in some kind of work or suitable recreation. The report includes an historical sketch of the hospital and its management. One interesting fact is that this institution was perhaps the first of its kind in the South to establish a separate building for the treatment of the epileptic insane.

THE IMPORTANCE OF THE ANESTHETIC.

That the responsibility for the life of the patient, in many cases, rests with the anesthetist is a fact not generally appreciated. Too often the anesthetist is more interested in the details of the operation than in the anesthetic, though in many cases the danger to the patient from the anesthetic is greater than from the operation. The anesthetist should remember that he holds

the patient's life in his hands and should allow nothing to distract his attention or to hurry him—not even an impatient surgeon. The administration of anesthetics should be a specialty in itself and a successful anesthetist should be specially fitted for the work and should concentrate all his thoughts on his task. One who is possessed of sufficient tact and sympathy to win the patient's confidence and to allay his very natural apprehension and his fear of the anesthetic will find that the patient takes the anesthetic better, requires less of it, and suffers less from the after-effects. A patient who is not afraid of the anesthetic breathes more naturally and thus inhales the fumes without swallowing them; in this way the chances of post-anesthetic vomiting are lessened. In such cases, the stage of excitement is shorter than in those in which the patient is nervous and frightened. A careless anesthetist often allows a patient to come partly from under the influence of the anesthetic and then "crowds" it in order to prevent a complete return of consciousness. A skillful anesthetist, on the other hand, keeps the patient under to the required degree, seldom uses tongue forceps or mouth gag, with the result that the patient is generally completely relaxed and quiet during the operation. It is seldom necessary to administer morphin or other drugs beforehand and the use of atropin as a routine procedure should be condemned, if for no other reason than that it masks the eye symptoms of impending collapse and of returning consciousness. The importance of this subject should be given more recognition by our medical colleges, and no student should be allowed to receive his degree unless he has had individual instruction therein.

Medical News

CALIFORNIA.

Sanatorium Burned.—The California Sanatorium at San Bernardino was burned by fire early on the morning of March 31, the damage being about $4,000. The patients were removed without casualty.

State Board of Health Reorganizes.—On April 1 the State Board of Health met for reorganization at Sacramento, reelected Dr. Martin Regensburger, San Francisco, president; Dr. Wallace A. Briggs, Sacramento, vice-president, and Dr. Newell K. Foster, Oakland, secretary, and elected George D. Leslie, vital statistician.

Personal.—Dr. and Mrs. Frederick H. Tebbe, Etna Mills, had a narrow escape from death March 24, when their horses took fright and threw them sixty feet down a precipice. Fortunately, they sustained no injury aside from shock.——Dr. Sarah Vason, Philadelphia, has been elected superintendent of the Kaspare Cohn Hospital, Los Angeles. Drs. Philip Newmark, David W. Edelmann, Edmond M. Lazard and Adolph Tyroler have been appointed to the medical staff of the institution.

The Troubles of Unlicensed Practitioners.—I. H. Story, a "chiropractic" of Los Angeles, was found guilty of practicing medicine without a license March 25, and fined $125.——Ivan McLaughlin, Los Angeles, pleaded guilty to the charge of having given electrical treatments without a physician's license and was fined $100.——"Dr." William A. Anderson, who had been practicing medicine in Imperial for over a year, was arrested March 17 for practicing without a state license. He was taken to Brawley for a preliminary hearing, was ordered under bonds and had his trial set for the following Monday. After his return to Imperial he escaped from the officer in charge and fled into old Mexico. He was recaptured and taken to Brawley, but before the hour set for trial he again made his escape and has not been heard from since.

CONNECTICUT.

February Mortality.—There were 1,362 deaths in February, equivalent to an annual death rate of 16.8. The deaths were 49 less than in January and 61 in excess of the average for February for the five preceding years. The deaths from infectious diseases numbered 170, or 12.4 per cent. of the total mortality. The principal death causes were: Pneumonia, 222; nervous diseases, 155; consumption, 121; heart diseases, 120; influenza, 90; violence, 62, and bronchitis, 52.

Personal.—Dr. Harry C. Clifton has been appointed city physician of Hartford, vice Dr. Irving D. Blanchard.——Dr. Lewis Beers Porter, New Haven, has been appointed resident physician at the Manhattan Eye, Ear and Throat Hospital, New York City.——Dr. Henry P. Stearns, Hartford, after thirty-one years' service, has resigned the superintendency of the Retreat for the Insane, and has been succeeded by Dr. Whitefield N. Thompson, formerly of Brattleboro, Vt.

Biennial Hospital Appropriations.—The appropriations committee has reported the following appropriations: Hartford Hospital, $20,000; General Hospital Society of Connecticut, $20,000; Grace Hospital, New Haven; Grace Hospital, Bridgeport; Grace Hospital, Norwalk; Memorial Hospital, New London; Memorial Hospital, Waterbury; St. Francis' Hospital, Hartford; St. Francis' Hospital, Stamford, and St. Francis' Hospital, New Britain, $10,000 each; Danbury Hospital; Day-Kimball Hospital, Putnam; Litchfield County Hospital, Winsted; Meriden Hospital, and Middlesex Hospital, $6,000 each.

IDAHO.

Examiners Meet.—The State Board of Medical Examiners held an examination of applicants for licenses to practice medicine in Idaho, at Boise, April 4 and 5.

Personal.—Dr. Abraham L. Lehman, Wallace, sails for Europe, April 29.——Dr. J. B. Cooper, Boise, who held a license under the old law, but was charged with practicing medicine without a license, was found not guilty.

South Idaho Society Election.—The South Idaho District Medical Society met April 6, at Boise. The following officers were elected: President, Dr. James L. Stewart, Boise, and vice-president, Dr. James H. Bean, Pocatello. The session closed with a banquet at the Idanha Hotel.

ILLINOIS.

Smallpox Stamped Out in DeKalb.—DeKalb, by enforced vaccination and rigid quarantine, has brought under control in four weeks a threatened epidemic of smallpox.

Interne Examination.—An examination for three internships in the Illinois Charitable Eye and Ear Infirmary will be held at the infirmary, 227 West Adams Street, Chicago, May 3 and 4, beginning at 2 p. m. The service is for one year, beginning June 1.

Tuberculosis Sanatorium.—The Glackin bill providing for the erection of a state sanatorium for persons afflicted with tuberculosis has been favorably recommended by the house committee on appropriations, but the sum to be appropriated has been reduced from $200,000 to $50,000.

Hospital Annex Opened.—About one hundred physicians of Kane County and the counties adjacent attended the opening ceremonies of the annex to Sherman Hospital, Elgin, April 14. The addition nearly doubles the capacity of the institution, which can now accommodate 52 patients. The new building was erected at a cost of about $32,000.

National Guard Medical Department Examination.—An examination of candidate medical officers of the Illinois National Guard will be held April 29, at Senn Hall, Rush Medical College, Chicago, beginning at 9 a. m. The examining board is composed of surgeon-general, Col. Nicholas Senn; assistant surgeon-general, Lieut.-Col. G. Paull Marquis; Surgeon-Major Charles Adams and Surgeon-Captain S. C. Stanton.

Methods of Sewage Disposal.—The State Board of Health is about to make an exhaustive investigation into the methods of sewage disposal in the smaller cities of the state to remedy, so far as is possible, faulty conditions which may exist. The investigations will cover the various septic tanks in use to determine the degree of purification secured, and to what extent this method of purification may be recommended.

Osteopathic Legislation.—Senate bill No. 311, providing for the appointment of a board of osteopathic examiners consisting of five members, "two of whom shall be graduates of a

complete course in surgery," conferring on osteopaths the right to practice osteopathy, obstetrics and surgery and to use antiseptics, anesthetics and antidotes for poisons, requiring the board to issue "osteopathic physician's certificates," and making all statutory regulations controlling infectious and contagious diseases, and all requirements of public health acts apply to practitioners of osteopathy, was taken up for third reading, April 19. It is announced in the Springfield press that the sentiment of the senate is against the bill, but that it will be passed because of the popularity of its author, Senator Chaffee, who is deeply interested in the measure and is very anxious to have it given a trial on the statutes.

Chicago.

Illegal Practitioner Fined.—Mrs. Anne Borgard was fined $100 by Justice Chott, April 14, for practicing medicine without a certificate from the State Board of Health.

Hospital Incorporated.—The Chicago Emergency Hospital has been incorporated with a capital stock of $25,000 by Dr. Richard M. Fletcher, Anna Fletcher and W. M. Ford.

Deaths of the Week.—The total deaths for the week ended April 15 were 548, equivalent to an annual mortality of 14.35 per 1,000. Pneumonia caused 84 deaths; consumption, 59; nephritis, 55; heart diseases, 51; violence 45; bronchitis, 30, and cancer, 23. Measles and whooping cough are each reported to have caused 15 deaths.

Comparative Mortality by Decades.—Dr. Arthur R. Reynolds, at the close of his tenth year as Commissioner of Health, notes graphically the decrease in mortality in the city as compared with the previous decade. The annual mortality rate has decreased from 20.2 to 15.1 per 1,000, or 25.3 per cent. Of this saving 73.4 per cent. was among infants and children below the age of 5. There was a reduction of 86.2 per cent. in the mortality from smallpox; of 64.3 per cent. in that from diphtheria; of 59.5 per cent. in that from typhoid fever and diarrheal diseases; of 58.9 per cent. in that from measles; of 55.5 per cent. in that from scarlet fever; of 27.2 per cent. in that from whooping cough, and of 13.7 per cent. in the mortality from tuberculosis. Cancer shows an increase of 22.8 per cent.; influenza of 145 per cent.; pneumonia of 92.6 per cent.; nephritis of 172.9 per cent., and heart disease, 120.6 per cent. Among other important causes of death which show decreases in the second decade are bronchitis, 41.3 per cent.; cerebral apoplexy, 23.4 per cent., and nervous diseases, 45.8 per cent. With these decreases neither medical science nor sanitary administration can claim to have had much to do. They must be attributed to the general improvement of physique and increased vitality of the people of Chicago, due to saner modes of life, to better personal hygiene and to that popular education in sanitary matters which has made such vast strides in the last quarter of a century.

INDIANA.

Sanitarium Burns.—The Abbott Sanitarium, southeast of Fort Wayne, was burned early on April 6, with a loss of $35,000.

Shot by Insane Man.—Dr. Ira M. Washburn, Rensselaer, captain and assistant surgeon in the Indiana National Guard, was shot in the leg by an insane man, April 3.

Personal.—Dr. James N. Hurty, secretary of the State Board of Health, has received notice that he has been awarded a gold medal by the Louisiana Purchase Exposition.

Medical Graduates.—A class of 79 was graduated from the Medical College of Indiana, Indianapolis, at its thirty-fifth annual commencement exercises, held April 19. Prof. Stanley Coulter of Purdue University delivered the doctorate address.

Money for Hospitals.—St. Joseph's Hospital, Logansport, has received the estate of the late Father Marks, valued at $1,432.84.——The late Mrs. Anna Cage, Kokomo, bequeathed $5,000 to the city, to be made the nucleus of a public hospital fund.

Resurrection Cases Dismissed.—The five pending grave robbery cases against Dr. Joseph C. Alexander, late demonstrator of anatomy at the Central College of Physicians and Surgeons, Indianapolis, were dismissed April 11 on the ground that the defendant had not been retried on the original indictment nor on four others within three successive terms of court.

Personal.—Dr. George F. Edenharter, Indianapolis, superintendent of the Central Indiana Hospital for the Insane, has been for the fourth time reappointed superintendent for a term of four years.——Dr. William J. Fernald, Frankfort, sailed for Europe, April 8.——Dr. Elmer E. Morgan, Fort Wayne, was painfully but not seriously injured April 6, when his horse plunged over an embankment in the dark.

MARYLAND.

Meningitis Serum Experiments.—The State Board of Health has been experimenting on rabbits with a view to securing a protective serum for cerebrospinal meningitis.

State Hospital Staff Changes.—Dr. Robert F. Winterode, formerly pathologist, has been promoted to second assistant physician and director of the laboratory at Spring Grove Asylum for the Insane, and Dr. Thomas A. Hurley, clinical physician, has been made pathologist.

Medical and Chirurgical Faculty.—The subject of Dr. Edward N. Brush's presidential address before the Medical and Chirurgical Faculty of Maryland, April 25, will be "The Physician as a Citizen." At the session to be held at the Shepherd and Enoch Pratt Hospital, April 26, Dr. Simon Baruch of New York will speak on "The Physiologic Basis and Clinical Effects of Hydrotherapy in Chronic Disorders." The annual oration of Dr. William Osler on April 27 will be on "Unity, Peace and Concord." Immediately thereafter a portrait of Dr. Osler will be presented to the Faculty by his friends, Dr. George J. Preston making the presentation speech.

Baltimore.

Personal.—Dr. Carville V. Mace, Rossville, who was operated on April 1, for stone in the kidney, is rapidly improving.——Dr. Roland Whitbridge will spend the summer in Europe.

St. Joseph's Hospital Report.—The report of St. Joseph's Hospital for 1904 shows that 7,771 cases were treated in the dispensary. The work of the hospital, which is in charge of the Sisters of St. Francis, is increasing rapidly and the new buildings are fully occupied.

Work Against Tuberculosis.—The educational committee of the Maryland Association for the Prevention and Relief of Tuberculosis reports that during March 13 public lectures were given by the committee, mostly in crowded neighborhods, to more than 1,500 persons. Great stress was laid on the communicability, preventability and curability of the disease.

Will Be Painted by Sargent.—It is said that Drs. William H. Welch, William S. Halstead, Howard A. Kelly and William Osler, all of the original faculty of Johns Hopkins University, will meet in London during June and will then sit for a group portrait to be painted by John S. Sargent. The idea originated with Miss Mary E. Garrett of this city, the benefactress of the Johns Hopkins Medical School, who will bear the expense of the painting. Dr. Osler's departure is the first break in the original faculty of the medical school.

Baltimore Needs Sewage System.—The question of a sewerage system is being pushed with great vim and enthusiasm and in a few days a vote will be taken on the question of a loan with which to carry out this necessary improvement. Dr. Welch has said that "there is probably no other civilized city of the size and importance of Baltimore, certainly not in England, France, Germany or this country, which continues as this city has done to neglecet these fundamental demands of hygiene, and no such backward city can hope to maintain its position as an attractive and desirable place either of residence or of business."

MICHIGAN.

Money for Hospital.—James J. Hurley, who died in Flint, April 4, left a bequest of $25,000 to found a hospital for the city.

Health Conference.—The annual conference of health officials will be held June 1 and 2 at the State Laboratory of Hygiene, Ann Arbor.

Medical Mayors.—Dr. George E. Reycroft has been elected mayor of Petoskey.——In a contest for the mayoralty of Mason, Dr. William W. Root defeated Dr. Frank E. Thomas.

Comparative Morbidity.—For March, compared with the average for the ten years from 1895 to 1904, smallpox was more than usually prevalent, and pleuritis, pneumonia, erysipelas, intermittent fever, inflammation of bowels, measles, remittent fever, diphtheria, inflammation of brain and meningitis were less than usually prevalent.

The Most Dangerous Communicable Diseases.—Meningitis was reported during March at 13 places; whooping cough at 18 places; diphtheria at 59 places; measles at 79 places; ty-

phoid fever at 95 places; smallpox at 101 places; scarlet fever at 133 places; pneumonia at 144 places, and consumption at 221 places. Meningitis was reported present at 6 places more; whooping cough at 2 places more; diphtheria at 5 places less; measles at 11 places more; typhoid fever at 2 places more; smallpox at 5 places less; scarlet fever at 28 places more; pneumonia at 2 places more, and consumption at 30 places less in March than in the preceding month.

Personal.—At the annual meeting of the State Board of Health, April 14, Dr. Victor C. Vaughan, Ann Arbor, was unanimously re-elected president of the board.——Dr. Frank W. Shumway, Williamston, has been appointed secretary of the State Board of Health, vice Dr. Henry B. Baker.——Dr. George Bunch has resigned the position of assistant physician of the Wolverine Mining Company, Calumet.——Dr. W. A. Burnham, surgeon to the Trimountain Mining Company, Calumet, has resigned, and has been succeeded by Dr. Edward V. Howlett.——Dr. William T. Morrison, Midland, who has moved to Pigeon, was the guest of honor at a banquet of the Midland County Medical Society, March 24.

Dr. Baker and the State Board of Health.—Henry B. Baker, secretary of the State Board of Health since its organization in 1872, to whose untiring zeal in public health work this board owes its high reputation, has been found by the dominant party in the state to be *persona non grata* and has been unceremoniously legislated out of office. His friends state that Dr. Baker has probably done more than any other man in this state to lessen sickness and death, but this counts for nothing when the politician demands his decapitation. The only sins that he is charged with are holding office too long and doing his duty too strenuously. Dr. Baker can, however, always have the consciousness of duty well done and he can better afford to bear this treatment, so undeserved, than the state can to bear the odium of having dismissed without ceremony one who has done so much for the welfare of its people.

MISSOURI.

Unlicensed Practitioner Fined.—In Justice Montgomery's court at Memphis, April 4, Dr. John M. Davis, Hamilton, Ill., was found guilty of practicing medicine without a license and was fined $100 and costs.

Trial Avoided.—To avoid the useless expense of a trial to the county, the prosecuting attorney dismissed the case against Dr. Annette H. Wagoner, Kansas City, charged with having caused the death of Mrs. Zeebe, by a criminal operation.

Personal.—Dr. Valentine R. King, Hopkins, has been appointed assistant superintendent of the National Cemetery, Mound City, Ill.——Dr. Larkin H. Callaway has succeeded Dr. Joseph F. Robinson as superintendent of State Hospital for Insane No. 3, Nevada.

Kansas City Commencements.—University Medical College held its twenty-fourth annual graduating exercises April 8, at which a class of 58 received diplomas. The address to the class was delivered by J. Willis Gleed.——The Medico-Chirurgical College graduated a class of 16 at its eighth annual commencement, held April 12. Rev. F. C. McConnell delivered the doctorate address. The college has been merged into the medical department of the University of Kansas.——Kansas City Medical College delivered diplomas to a class of 35 at its commencement exercises, April 11. Senator Warner and Chancellor Frank Strong of the University of Kansas delivered addresses.

St. Louis.

Exclusive Physicians' Building.—The Lister Building at Olive Street and Taylor Avenue is devoted exclusively to the housing of the offices of medical men. Another building, the Humboldt, is in course of erection at Grand and Washington Avenues. Medical men are deserting the downtown skyscrapers for these modern buildings in the residence portion of the city.

Medical Library in Own Building.—The St. Louis Medical Library Association is now comfortably housed in its own building at 3525 Pine Street. This building is also used as a meeting place for all the medical bodies of the city. A movement is on foot to build an annex to the library building in the shape of a suitable auditorium for the holding of the meetings of the St. Louis Medical Society and other medical bodies.

Personal.—Dr. Ralph Thompson, associate professor of pathology at the St. Louis University, sails for Europe, April 27, to spend six months in research in the Berlin laboratories of pathology.——Dr. Harry P. Wells was severely burned on the hands and arms by the explosion of an alcohol lamp in his office, April 8.——Dr. Hillel Unterberg has been appointed psychiatrist and neurologist at State Hospital for Insane No. 3, Nevada.

Sanatorium Bill Signed.—Governor Folk has attached his signature to the bill recently passed by the legislature creating the Missouri State Sanatorium for the Treatment of Incipient Tuberculosis. This bill carried with it an appropriation of $50,000 to erect the sanatorium in some mountainous part of the state. The site is not specifically selected in the bill.—May 10 the St. Louis Medical Society and the Medical Society of City Hospital Alumni will give a testimonial banquet to the medical members of the last legislature who were so active in the passage of legislation of benefit to the medical profession, particularly that legislation which has created the State Sanatorium for Tuberculosis.

Clarification of St. Louis Water.—A symposium on the present system of clarification of the St. Louis water supply was held at the meeting of the St. Louis Medical Society, April 15. Mr. John Wixford, chemist of the water department, explained the present effective process of treating the St. Louis water. This system consists in mixing solutions of sulphate of iron and lime with the water as it is pumped from the Mississippi River. The results achieved by this simple, cheap and harmless method of purifying water are remarkable. St. Louis now has clear water. Papers read showed a decrease in the number of typhoid cases in this city. The city bacteriologist showed that the present system of clarification rids the water of about 94 per cent. of the bacteria.

Fighting for Betterments.—The combined medical profession of St. Louis is endeavoring to change the management of the St. Louis City Hospital. The end in view is to have an organization like that of the Boston City Hospital or that of the Cook County Hospital, Chicago, namely, a board of governors or supervisors for the hospital, who shall select a competent medical staff and shall bring the hospital under modern management. At the present time the City Hospital has no regularly appointed medical staff. The internes have no guidance save that of the senior assistants, assistant superintendents and superintendent. The present superintendent is doing well in spite of the bad system under which he is forced to work, and he is in hearty accord with the movement to change the system of management.

NEW YORK.

Gifts to Nassau Hospital.—Mrs. Robert J. Dietz has given $3,600 to this institution at Mineola, L. I., in memory of her husband; Mrs. W. K. Vanderbilt, Jr., $2,000; W. B. Leeds, $3,000, and George Arents, $1,000. There will soon be sufficient to endow additional beds and possibly to enlarge the hospital.

Bills Passed.—All the bills adjusting the water supply of New York City have been passed by the assembly.——The Fish bill abolishing the boards of visitation of the lunacy commission and creating local boards of managers of the state hospitals has passed.——The annual supply bill which carried additional appropriations of $3,000,000, after some difficulty over appropriations of $3,505 and $904 for deficiency in the lunacy commission to make up losses by defalcations in the offices of two of the state hospitals, has also passed.

New York City.

More Milk Inspectors.—The Board of Councilmen has voted $5,000 for additional milk inspectors for the Health Department of Buffalo.

Personal.—Dr. Samuel Gluck lost several valuable books as the result of a fire in his home.——Dr. George T. Harrison arrived from Europe April 13.

Fever-stricken Ship.—The British steamship *Osceola*, which arrived from the River Plate, had three of her crew sick with a fever resembling malaria and two died at sea. One of these had a temperature of 109 degrees.

City Death Rate Low.—The statement of the Health Department issued on April 13 shows that the death rate for the week preceding was at the rate of 20.11 per 1,000 per annum, which is a decrease of 5.65 over the corresponding week of last year.

Hospital Sunday Collection.—The Hospital Saturday and Sunday Association reports that the collection on Hospital Sunday will amount to about $92,000, a gain of nearly 25 per cent. over last year. This fund will be distributed among the 40 hospitals in the association.

To Teach Prescription Writing.—As so many physicians are deficient in prescription writing the Kings County Pharmaceutical Society has undertaken the task of familiarizing physicians with the National Formulary compounds. A canvasser has been employed to visit physicians and show them how they can become more expert in prescription writing.

A Hospital Island.—Secretary Metcalf has awarded the contract for the construction of an island in New York harbor on which will be built one of the finest institutions in the world for the treatment of contagious diseases, and will be an addition to the immigrant station now at Ellis Island. It is expected that this model modern hospital will be completed within two years.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended April 8, 441 cases of tuberculosis, with 201 deaths; 422 cases of measles, with 13 deaths; 339 cases of diphtheria, with 27 deaths; 259 cases of scarlet fever, with 7 deaths; 191 cases of cerebrospinal meningitis, with 110 deaths; 26 cases of typhoid fever, with 13 deaths; 94 cases of chickenpox and 4 cases of smallpox.

Buffalo Personals.—Dr. Charles F. Durant has been appointed superintendent of the Quarantine Hospital.——At the recent examination for police surgeon the following were placed on the eligible list: Drs. William H. Marcy, George H. Westinghouse and Grosvenor R. Trowbridge.——Dr. Francis M. Rich was fined $10 for failing to report a case of scarlet fever. He claims that the case was not one of scarlet fever.

In Behalf of the Polyclinic.—In a letter to the *Sun* Dr. John A. Wyeth sets forth the value of the work done by this institution and appeals for aid. He describes the new building which has been undertaken with its larger dispensary, hospital and laboratory facilities, and says that it will require $300,000, of which $37,000 has been subscribed this year by the medical staff, and a donation of $20,000 has also been made.

New Floating Hospital.—The Burlee Shipbuilding Company has almost completed a floating hospital for the Health Department, which is 126 feet long and 30 feet beam, and will accommodate 160 patients. The boat is so constructed as to provide wards for any kind of contagious disease, and at the same time prevent the germs of one disease from reaching another ward. The boat will cost about $70,000 and will be put into commission about October 1.

Creameries Inspected.—Dr. Darlington of the Health Department of New York City, together with the chief milk inspector, chief sanitary inspector, milk inspector and photographer of the department, have made an inspection of the creameries along the line of the D., L. & W. Railroad. They report that the creameries are in much better condition than they were a year ago. Dr. Darlington has entered into a combination with Health Commissioner Greene of Buffalo and Commissioner Wheating of the State Agricultural Department to reach all the milk dairies of the state.

No Danger from Zoo Tuberculosis.—City Bacteriologist Bissell of Buffalo has submitted his report on the subject of recent investigations into the tuberculosis in the elk and red deer paddock at the park zoo, with special reference to the probable danger, through infection to visitors and persons living contiguous to the park. No danger is to be apprehended from this source. He recently took cultures from the soil of paddocks to ascertain how much tuberculosis it contains. The report states that since 1898, 20 elk, 7 red deer, 2 buffaloes, 3 monkeys and one wolf have died from tuberculosis. He states that there is more danger from the ordinary danger of street dust than from this soil. Disinfection of the soil is, therefore, not recommended.

PENNSYLVANIA.

Anonymous Donor.—A woman of Allentown has donated $6,000 to the Allentown Hospital for the erection of a sun parlor.

Interne Examination.—The Chester County Hospital, West Chester, will conduct its examination for resident internes in the hospital building, April 30.

State Board Examinations.—Examinations of the State Medical Examining Board will be held June 27, 28, 29 and 30, at Industrial Hall, Philadelphia, and the Pittsburg Academy, Pittsburg.

Vaccination Bill Passed.—The bill providing for compulsory vaccination of inmates in all institutions receiving state aid was passed by the house, April 11. The bill was once defeated, but passed finally by a vote of 158 to 4.

Appropriations.—The following appropriations have been made by the legislature: State Hospital, Blossburg, $16,000; State Cottage Hospital, Connellsville, $21,940; Christian H. Buhl Hospital, Sharon, $19,500; State Hospital, Scranton, $255,000, and Packer Hospital, Sayre, $24,000.

Tuberculosis Society Meets.—The thirteenth annual meeting of the Pennsylvania Society for the Prevention of Tuberculosis was held in Philadelphia, April 12. The election of officers resulted as follows: President, Dr. Joseph Walsh; vice-presidents, Drs. Howard S. Anders, Mazyck P. Ravenel, William B. Stanton, Albert E. Roussel, Daniel J. McCarthy, Josephus T. Ullom, Seneca Egbert, Lawrence Flick, Benjamin Lee, Samuel Dixon, all of Philadelphia; Dr. William T. Cummings, Media, and Messrs. Talcott Williams, Samuel Castner and Samuel Scoville, Jr.; secretary, Dr. Ward Brinton, Philadelphia.

Osteopathic Bill Passed.—The bill licensing osteopaths to practice in the state, which failed to pass a short time ago, finally passed the house, April 11, by a vote of 104 to 50. Every effort is being made by the regular school and the homeopathic school to have the governor veto the measure, and it is generally believed that the effort will be successful. The bill is most ingeniously constructed. It appears to place severe restrictions on the osteopaths, but in fact gives them a privilege enjoyed not even by the practitioners of the other schools, namely, that it permits them to undergo an examination conducted by five osteopaths instead of taking the regular examination, as required by the regulars, homeopaths and eclectics. The examination papers of all these schools are the same in all branches, except in materia medica. It is considered strange by the opponents of the bill that osteopaths, if, as they assert they are, carefully schooled in all branches of medical knowledge, should avoid taking the regular examination, as this, if passed successfully, would give them the right to practice any sort of healing they desire.

Philadelphia.

Milk Inspection Report.—The report of the Health Bureau from the division of milk inspection shows that during March 4,743 inspections were made. The total quantity of milk inspected was 143,118 quarts; 129 chemical and 740 microscopical examinations were made of specimens, and 1,755 quarts were condemned.

Bacteriologic Work for March.—The report of the bacteriologic laboratory of the Bureau of Health shows that 1,513 diphtheria examinations were made and 536 examinations of the blood for typhoid; that 733 bacteriologic investigations were made of milk, and 189 of sputum, and that 1,135 doses of antitoxin were issued.

Typhoid Fever Condition.—The weekly reports of the Bureau of Health for March show 1,054 cases of typhoid fever in the city. Of this number only 3 occurred in the filtered water district of West Philadelphia; only 16 in the Roxborough filtration district; while 101 occurred in that part of West Philadelphia not supplied with filtered water.

Work of Medical Inspectors.—During March the number of inspections of individuals made, excluding schools, was 3,942; 614 fumigations were ordered; 49 cases were examined for special diagnosis, and 6,519 examinations were made in the different schools. The number of children excluded from the schools as a result of these inspections aggregated 1,097. There were also 355 cultures taken, 79 injections of antitoxin administered, and 765 vaccinations performed.

Reception to Medical Society.—Dr. Charles K. Mills, professor of neurology in the University of Pennsylvania, entertained the society named in his honor, of the same institution, at his residence, March 24. Beside the society members Drs. W. Joseph Hearn, William W. Keen, Francis X. Dercum, Charles H. Frazier, John G. Clarke, William J. Spiller, Charles S. Potts, Charles S. Turnbull, John Marshall, Barton Cooke Hirst, William J. Pickett, James Hendrie Lloyd and John B. Deaver were present.

Hospital Reports for March.—Presbyterian Hospital admitted 195 patients to the wards and treated 2,199 in the different dispensaries.——Howard Hospital admitted 47 patients and treated 747 in the dispensaries, and prepared 3,558 prescriptions.——Charity Hospital treated 1,005 patients in the different dispensaries.——St. Agnes' Hospital admitted 184 new cases to the wards, treated 592 new cases and 2,750 old cases in the dispensaries.——St. Mary's Hospital admitted 179

new patients to the wards and treated 3,832 cases in the various dispensaries.

Health Report.—The total number of deaths reported for the week ended April 15 aggregated 517. This is an increase of 14 over those of last week and a decrease of 53 from the corresponding period of last year. There were 147 cases of typhoid fever reported, a decrease of 14 from those of last week. The principal causes of death were as follows: Typhoid fever, 21; diphtheria, 10; cerebrospinal meningitis, 3; pulmonary tuberculosis, 79; cancer, 21; apoplexy, 24; heart disease, 50; pneumonia, 52, and Bright's disease, 43. There were 246 cases of contagious disease reported, with 35 deaths, as compared with 280 cases and 42 deaths for the preceding week.

Hospital Examinations.—Examination for resident physicians at St. Mary's Hospital will be held in the hospital building, April 28, at 8 p. m.——Examination for internes at the Howard Hospital will be held May 16, in the hospital building, at 8 p. m.——Examination for resident physician at St. Timothy's Hospital will be held in the hospital, April 22, at 8:15 p. m.——The City Hospital of Williamsport, Pa., will hold its examination for resident physicians in the Y. M. C. A. Hall, Philadelphia, April 29, at 9 a. m.——A competitive examination for positions as resident physicians to the Jewish Hospital of Philadelphia will be held at the hospital, April 4, at 5 p. m.——A competitive examination for internes to the Mercy Hospital, Pittsburg, will be held in the medical laboratories of the University of Pennsylvania, Philadelphia, April 8, at 2 p. m.

The Meningitis Situation.—Reports from the Bureau of Health show that between January 1 and March 31, 40 cases of epidemic cerebrospinal meningitis occurred. Of this number 13, or 32.6 per cent., proved fatal. Of the 40 cases 8 occurred in four houses, that is to say, 2 cases to a house. From two of the houses the cases were reported on the same day. From the third house there was an interval of three days, and from the fourth house an interval of six days between the dates of the reports. There is a possibility, therefore, of a transmission of the disease in the cases of the last two houses. Beyond this there is little evidence of the direct transmission of the disease from person to person. The cases reported were scattered throughout the city, and not confined to any one section. Approximately 63 per cent. of the cases occurred in persons between the ages of 1 and 21 years. Only 2 cases were in children less than 1 year old.

Appropriation for Hospitals.—The following appropriation bills have finally passed: Samaritan Hospital, $130,000; Frankford Hospital, $60,000; American Oncologic Hospital, $150,000; St. Joseph's Hospital, $15,000; Philadelphia Polyclinic and College, $95,000; Jewish Hospital Association, $20,000; Kensington Hospital for Women, $10,000; Orthopedic Hospital, $35,000; German Hospital, $75,000; Rush Hospital for Consumptives, $20,000; Garrettson Hospital, $50,000; Wills Eye Hospital, $80,000; Mount Sinai Hospital, $15,000; St. Mary's Hospital, $27,000; trustees University of Pennsylvania for hospital, $175,000; Lying-in Charity Hospital, $15,000; St. Timothy's Hospital, Roxborough, $24,500; Howard Hospital for Incurables, $10,000; Free Hospital for Poor Consumptives, $100,000; Frederick Douglass Hospital, $12,000; St. Christopher's Hospital for Children, $15,000, and Maternity Hospital, $5,000.

TEXAS.

Physician Acquitted.—Dr. Edward L. Fox, Houston, charged with causing the death of Anna Louise Lindley by a criminal operation, was acquitted March 29. The testimony showed that the death was due to tetanus, but not that it was superinduced by abortion.

State Association Meeting.—The thirty-seventh annual meeting of the State Medical Association of Texas will be held at Turner Hall, Houston, April 24 to 28. The house of delegates convenes April 24, and the general session April 25, at 9:30 a. m. A large number of scientific papers will be presented. At the opening meeting addresses of welcome will be delivered by Mayor Jackson and by Hon. C. R. Wharton of Houston. A rate of one fare plus 10 per cent. has been secured on all roads, good from April 21 to May 1.

Many Medical Graduates.—The Medical Department of Fort Worth University graduated a class of 21, April 6. Dr. W. Beverly West delivered the faculty address and President George H. MacAdam, D.D., delivered the university address and presented the diplomas.——Baylor University College of Medicine, Dallas, held its fifth annual commencement exercises April 4, when 24 applicants were awarded diplomas. Dr. Charles M. Rosser delivered the faculty address.——The cornerstone of the new Southwestern University Medical College, Dallas, was laid April 3, with appropriate ceremonies, and on the same evening the graduating exercises of the college were held, at which a class of 11 received diplomas. Rev. Alonzo Munk, Fort Worth, delivered the address.

WASHINGTON.

New Hospitals.—Work has begun on the new Sacred Heart Hospital, Spokane, a six-story building, to cost $300,000.——The Roslyn and Cle Elum Hospital is under construction and will be completed by the middle of summer.

The Physicians Won.—In the damage suit of C. O. Peterson against Drs. George and Roy S. Wells, Northport, in which $10,000 was asked because of alleged malpractice while the plaintiff was a patient in the defendants' hospital, Judge Carey took the case from the jury and found for the defendants.

Found Guilty.—O. V. Lawson, Seattle, prosecuted by the King County Medical Association for practicing without a license, has been found guilty.——"Dr." Wong Him, Seattle, charged with a similar offense, who made the plea that he should not come up for examination because he was not familiar with English, was also found guilty as charged.

Legislation.—The legislature passed three bills of medical interest, one prohibiting formaldehyd in milk and one amending the medical practice act, raising the fees to $25, eliminating reciprocity and requiring a four-year course of study. The third was to prevent noxious lost-manhood and syphilis advertisements, but it was passed in a changed form and its power is not certain. It originally referred to "sexual" diseases; it was changed to read "venereal" diseases at the behest of patent medicine proprietors, assisted by all the newspapers except the Seattle *Post-Intelligencer*. Several osteopathic bills failed. *Northwest Medicine* remarks: "From a medical standpoint the recent session of the legislature is noticeable for what it failed to accomplish rather than for its acts passed. . . . The lesson to be drawn by the profession from this year's experience is the necessity of organization and of well laid plans for legislative action. The state association should determine on desirable legislation and, by having the same properly fathered, there would be a reasonable prospect of securing its passage. This will doubtless be a subject of future deliberation."

GENERAL.

Dr. Wiley Addresses the American Philosophical Society.—Dr. H. W. Wiley, head of the Bureau of Chemistry of the Department of Agriculture, addressed the American Philosophical Society at its meeting in Philadelphia, April 13, on "The Effects on Metabolism of Preservatives Added to Food." Only the data concerning boric acid and borax were available for detailed discussion. The effect on the 12 persons experimented on was stated to be as follows: 1, to diminish or tend to diminish the weight of the body; 2, to diminish the activity of the appetite; 3, a tendency to diminish the per cent. of nitrogen excreted which slightly marked in a preservative period was even more marked in the after period, showing, therefore, the accumulative effect in this direction; 4, the development of the tendency to increase the excretion of phosphorus; 5, a tendency to increase to a slight extent the combustion of fat in the food; 6, a tendency to diminish slightly the total calories obtained from the food, and 7, a tendency to increase the quantity of solids in the food eliminated in feces. His work showed that nearly 80 per cent. of the total borax and boracic acid ingested in the food is excreted in the urine, and the rest apparently through the skin. The general result, he says, is a derangement of metabolic processes of a character tending to injure health.

National Tuberculosis Association to Meet.—The annual meeting of the National Association for the Study and Prevention of Tuberculosis will be held in Washington, May 18 and 19. Addresses will be made by the president, Dr. E. L. Trudeau, and by the two vice-presidents, Drs. William Osler of Baltimore, and Hermann M. Biggs of New York City, on the morning of May 18. In the evening an address will be made by Mr. Talcott Williams of Philadelphia, to be followed by the business meeting. The afternoon of May 18, and the morning and afternoon of May 19 will be given up to meetings

of the three sections. The officers of the sections are as follows: Sociological—Homer Folks, New York, chairman; Miss Lilian Brandt, New York, secretary. Clinical and Climatological—Dr. Norman Bridge, Los Angeles, chairman; Dr. Sherman G. Bonney, Denver, secretary. Pathological and Bacteriological—Dr. M. P. Ravenel, Philadelphia, chairman; Dr. D. J. McCarthy, Philadelphia, secretary. The papers already announced promise an interesting and valuable series of meetings. The sociological section, in addition to the report by the chairman, will offer papers on "A Working Program for Associations for the Prevention of Tuberculosis, National, State and Local," by Edward T. Devine of New York; "Progress of the Sanatorium Movement in America," by William H. Baldwin of Washington, and "Infection in Transportation," by Dr. H. M. Bracken of St. Paul. The climatological and clinical program, in addition to the address of the chairman, includes a number of reports and papers of particular significance. The report of the committee on clinical nomenclature under the chairmanship of Dr. V. Y. Bowditch of Boston, will be discussed by Drs. Welch, Trudeau, Stengel and Vaughan. An authoritative pronouncement by a body of the authority of the national association is desirable. The report of the committee on early diagnosis, under the chairmanship of Dr. Arnold C. Klebs of Chicago, will be discussed by Drs. Osler, Janeway, Knight and Babcock. The rôle of climate in the management of tuberculosis is also the subject of a committee report by Dr. C. L. Minor of Asheville, the chairman. A symposium on the sanatorium treatment of consumption also promises matter of interest. Other papers are expected by Drs. C. L. Greene of St. Paul, William S. Halstead of Baltimore, C. F. Gardner of Colorado Springs, Edward O. Otis of Boston, S. A. Knopf of New York, J. A. Wilder of Denver, H. B. Loomis of New York and William Porter of St. Louis. The pathologic and bacteriologic section will be strictly technical in scope. An introductory address will be made by Dr. William H. Welch on "Channels of Infection in Tuberculosis." A large attendance is expected. The program will soon be completed and copies may be obtained of the secretary, Dr. Livingston Farrand, 105 East Twenty-second Street, New York.

CANADA.

Grants to Hospitals.—The Winnipeg city council has made a grant of $10,000 to the Grace Hospital and Rescue Home of the Salvation Army of that city.——Toronto has contributed $2,000 to the Toronto Free Hospital for Consumptives, situated about 10 miles from that city and under the control of the National Sanitarium Association.——The new government of Ontario is likely to make a special grant of $25,000 to the Muskoka Free Hospital for Consumptives.

British Columbia's Vital Statistics.—The thirty-second annual report of the provincial registrar of births, deaths and marriages of British Columbia shows that during 1904 there were 2,139 births, 1,252 marriages and 1,734 deaths recorded in that province. Of the births 1,121 were boys, 1,018 girls. One hundred and forty-five deaths were due to zymotic diseases, 194 constitutional, 808 local, 267 development, 287 violent deaths; ill-defined, 15; natural causes, 9. Pneumonia claimed by far the greatest number of victims, namely, 104. There were 79 deaths from tuberculosis.

Dr. Osler in Montreal, Ottawa and Toronto.—Dr. Osler visited Montreal April 14, Ottawa April 15, and Toronto April 16. At Montreal he addressed the medical students of Montreal on "The Student In and Out of College." On the evening of the same day Dr. Osler was the guest of honor at the banquet of the medical faculty and the students of McGill University. The following day he was the guest of the governor-general at Ottawa, whence he came to Toronto for a hurried goodby to his friends before leaving for Buffalo and Baltimore. Several Toronto physicians will attend the dinner in Dr. Osler's honor at New York, May 2.

FOREIGN.

The Chrobak Endowment.—Professor Chrobak of Vienna was recently presented by a group of ladies with $5,000 on his sixtieth birthday. He has endowed with it a fund for the promotion of scientific research in the Vienna gynecologic clinics.

G. Mayer Festschrift.—Dr. G. Mayer of Aix la Chapelle celebrated his eightieth birthday April 9. He is known as the discoverer of ankylostomiasis in miners, as well as by a number of other scientific works. He is the oldest living pupil of Virchow.

Russian Physicians Captives in Japan.—A Russian exchange states that the Russian physicians now prisoners in Japan have been appointed the medical attendants to the other Russian prisoners, and that they are to be paid by the Japanese government for their professional services.

Cancer Research Committee in Bavaria.—The mortality from cancer is exceptionally high in Bavaria, and a committee for special research has just been organized there. A local subcommittee has already been formed at Munich. It includes von Angerer, Bollinger, von Winkel and von Grashey.

Institute for Physicotherapy at Heidelberg.—A new university institute is to be installed at Heidelberg in connection with the medical polyclinic in charge of Vierordt. All kinds of electrotherapy, hydrotherapy, phototherapy, treatment by inhalation, sunbaths, *x*-rays and radium rays, etc., will be practiced and taught.

Proposed Monument to Servet.—Miguel Servet was a physician of Spanish birth who is said to have discovered the pulmonary circulation of the blood. He was burned at the stake in Genoa, Oct. 27, 1553, by the Inquisition and a committee has recently been organized to collect subscriptions to erect a monument to his memory.

Visit of von Noorden to New York and Chicago.—The Herter lectures are to be delivered at New York this season by Professor von Noorden of Frankfurt a. M. His theme will be "Disturbances in Metabolism," with special reference to diabetes. He will also speak on "Gout and Nephritis" at Chicago, on invitation of Professor Billings.

Plague in Chili.—The *Public Health Reports* state that the government has ordered the closing of the large schools and has put in force many measures to prevent the introduction of plague in Santiago. The intensity of the epidemic in Pisaqua has somewhat diminished, though a dispatch dated March 14 states that the population is greatly reduced.

Vaccination-Gambling Alliance.—It is reported that the alcalde of Madrid, in order to overcome the repugnance of the populace to vaccination, has organized a lottery, the tickets to be distributed free to all applying for vaccination at the city health office. He has given 3,000 pesetas (about $600) out of his own pocket to be distributed in the prizes.

The Berlin Children's Sanatorium.—An institution is opened this month, not far from Berlin, to serve as a country sanatorium for weakly children under school age and convalescents of any age. Bedridden and febrile cases are excluded. There are accommodations for 24, and Dr. H. Neumann is supervising physician. The institution is expected to be partially self-supporting.

Falling Off in Number of Physicians Licensed in Germany.—The number of "approbations" in the German empire has dropped from 1,562 in 1902-03 to 1,056 in 1903-04. This is the smallest number of physicians licensed in one year since 1886. The number of dentists has also dropped from 162 to 147, and of pharmacists from 37 to 23. The list of licensed physicians includes 11 medical women, and there are 2 women dentists.

Student Riots in Paris.—Again the medical school at Paris has had to be temporarily closed to put an end to the "manifestations" of the students. They rebelled against the severity of certain examinations and proceeded to the home of Professor Gariel in a turbulent crowd. The superintendent of police struck one of the students in his face with a cane and the Latin Quarter was in a ferment. The prefect of police apologized on behalf of the superintendent and published his apology in all the dailies.

Destruction of Medical College at Bahia, Brazil.—The medical college, with all its equipment and valuable library, was almost totally destroyed by fire in March. The building used to be a Jesuit monastery, but had been conveniently fitted up for the medical school. The loss of the reference books and numbers of rare works of the early masters and files of medical journals is irreparable, but the government is already taking steps to replace the building and to equip it with modern appliances. The official medical journal published there, the *Gazeta Medica da Bahia*, was founded in 1866 and is now in its thirty-seventh volume.

Smallpox in Sierra Leone.—An outbreak in smallpox is reported from Sierra Leone. The *Public Health Reports* state that the authorities seem to have the situation well in hand. The disease is confined principally to the suburban settlements, the central portion of the city, in which are the prin-

cipal business and government offices and consulates, being unaffected. The disease seems to have been introduced into the city and colony from the interior by means of the railroad. Some persons have been convicted of concealing cases from the health authorities and in this way the disease was firmly established before its presence was detected.

Lead Poisoning in France.—The discussion in the French senate on legislation prohibiting the use of white lead has brought out the fact that the number of cases of lead poisoning among painters is growing less every year. There are about 25,000 to 30,000 painters at Paris, and during the last ten years an average of 200 have been under treatment for lead poisoning in some form, almost invariably mild. During this period 13 painters have died in the hospitals of lead poisoning. About ten deaths from this cause occur annually in the city. These figures were supplied by A. Gautier, who has been connected with the Seine department of health for twenty-five years.

Centennial of Discovery of Morphin.—On March 20 the little German town of Hameln (Hamelin) in Hanover, witnessed a notable gathering of pharmacists and chemists to celebrate the hundredth anniversary of the discovery of morphin. They gathered around the building in the Osterstrasse in which the famous Sertürner, the discoverer of morphin, had his pharmacy for twenty years before his death. Among other ceremonies a memorial tablet was placed on the building in the name of the German association of pharmacists. Hamelin will also be remembered as the scene of the colossal suggestion or hypnotic suasion of the "pied piper of Hamelin," after the townspeople had refused to pay his promised fee for delivering the town from rats.

Incomes of German Physicians.—The official statistics recently published state that there are 3,956 physicians in the Brandenburg district, which includes Berlin and Charlottenburg. Among the 2,060 physicians of Berlin 54 have an income of only 900 to 1,050 marks, or about $225 to $262; 261 have less than $522, and 206 less than $725. These 521 physicians form about 26 per cent. of the total. In Charlottenburg the proportion is less than 21 per cent., but in Rixdorf it is 46 per cent. About 200 physicians in Berlin have incomes of from $725 to $1,050. The number of Berlin physicians with incomes over $1,250 is said to be 994. This group includes the chief luminaries of the profession, one being listed with an income of $82,500, and seven others with incomes of over $40,000.

Prizes Offered for Works on Lead Poisoning.—The International Association for Protection of Working People offers a dozen prizes for the best works on the prevention of lead poisoning. The first prize is $1,250, to be given for the best work on the means to prevent lead poisoning in handling ores containing lead. The second prize is $2,500 for the best work on means to avoid the dangers from lead in lead mines. Two prizes of about $500 each are offered for works on means to avoid the danger of lead poisoning in paint factories, storage battery works, etc., also four prizes of from $187 to $375 for the best works on the same subject applied to painters, varnishers, etc., and four similar prizes for works in regard to printers, type founders, etc. Competing articles should be sent to the "Secretariat der internationalen Vereinigung für Arbeiterschutz," at Basle, Switzerland, before December, 1906. Further information on request at this address.

Third German Preventive Congress.—This congress will be held next year at Mannheim or Königsberg (both cities are competing for the gathering). The question of "Sexual Pedagogics" is to be the main theme discussed, and a committee has been appointed to study the subject. The congress which has just closed its sessions was described in these columns on page 1207. Later reports state that the members of the congress unanimously agreed in respect to non-interference with advertising of measures to prevent contracting venereal disease. Neustätter of Munich and Bernhard and Lesser of Berlin stated that these measures can not be absolutely advised against. The advertising, however, should be restricted to proper limits. It should be expressly stated in the official regulations that measures to protect against the contracting of venereal disease do not come under the heading of articles prohibited on account of being destined to obscene purposes. Neustätter proposed that an official preventive censorship should be established for all advertising of protecting measures, medicines, etc. It was reported at the congress that a million copies of the preventive circular had been distributed to young men throughout Germany. A similar circular to be given to girls and women is now being prepared, and collective inquiries on questions in this branch of scientific work are to be undertaken. The preventive circular referred to above was mentioned in these columns on page 564 of volume XLI.

Damage Suit Against Vulpius.—Prof. O. Vulpius, the well-known orthopedist of Heidelberg, recently operated on a young man whose right knee was ankylosed at an acute angle. There was also a tumor on the inside of the leg, above the knee. Vulpius told him, it is said, that the knee could be straightened by a simple and harmless operation, and that he could return home in eight to ten days. Vulpius severed the flexor tendons behind the knee and divided the femur above, and placed the leg in a padded plaster cast in extension. The tumor was not removed and no hole was left for it in the cast, but the toes projected from the cast. In the course of twenty-four hours they became discolored, with loss of sensibility, as Vulpius determined himself by pricking with a needle. He made no change in the dressings and left town, leaving the further care of the case to his assistant. The leg became more and more painful and by the twelfth day the toes were blue and swollen, with fever. The assistant finally yielded to the patient's entreaties and removed the cast. The foot and leg were found gangrenous, and on the twenty-eighth day Vulpius—who had returned in the meanwhile—amputated the leg. The patient left the clinic after a three months' stay and instituted proceedings against Vulpius. He demanded that Vulpius should provide him with an artificial leg and pay him a yearly pension of $125 in quarterly installments and also a cash indemnity of $3,000. The local court decided in favor of the plaintiff, and appeal to the supreme court resulted in a confirmation of the verdict.

LONDON LETTER.

Plague in India.

The deaths from plague in India having reached the appalling total of over 1,000,000 per annum, the government has appointed an advisory committee for plague investigation. This committee has been constituted by the India Office, the Royal Society and the Lister Institute. It has for its object not the question of the administration of plague work, but the study of the bacteriology of the disease. The chairman of the committee is Surgeon-General Branfoot, president of the medical board of the India Office. The other members are Sir Michael Foster and Dr. J. Rose Bradford (nominated by the Royal Society); Colonel David Bruce and Dr. C. J. Martin (nominated by the Lister Institute). Dr. Martin has already sailed for India and is due to reach Bombay on April 14. He will then make arrangements for laboratory accommodation, etc. On receipt of information from him two bacteriologists will probably be sent out from England in a few weeks' time. Two members of the Indian Medical Service have also been lent by the Indian government for the work in India. The officers will probably travel over the plague area, and the headquarters of the committee will probably be the Pasteur Institute at Kassauli.

Ambidexterity in Art.

The second of the series of lectures arranged by the Ambidextral Cultural Society was delivered by Sir William Richmond. He referred to the extraordinary feat performed by Sir Edward Landseer, who drew the profile of a stag's head with its antlers complete with one hand while with the other he outlined the profile of a horse. Ambidexterity was taught to the Spartans, who were compelled to use the sword, the shield and the spear equally well with either hand. To educate the left hand requires perseverance. As examples of what can be done by perseverance two cases were mentioned. A congenitally armless painter copied the colossal picture of Reubens, "The Descent from the Cross," with his feet alone. A young man paralyzed in all his limbs learned to draw and even to engrave on copper, using his lips, teeth and tongue. A copy of Albert Durer's "Man of Sorrows," engraved in this astonishing manner, was handed round, and those present who were acquainted with the original pronounced the copy to be a perfect replica. The ambidexterity of Leonardo da Vinci was then referred to and it was shown to what a large extent in various handicrafts the Italians of to-day use the left hand, this being a survival of ancient custom. The lecturer concluded that the work of the society was of great importance and thought that a deputation should wait on the Board of Education to urge the adoption of its views in schools. The lecture was illustrated by drawings showing the difficulty of using the left hand without previous training, much amusement being caused by the lecturer's sketch made with both

hands simultaneously portraying a figure holding a stick, made with the right hand, and one holding a cigar, made with the left.

Pharmacology

FURTHER COMMENTS QUOTED.

We quote below some expressions of opinion from various publications which discuss the general subject of secret nostrums and the plan of the Council on Pharmacy and Chemistry:

JOURNAL OF THE MEDICAL SOCIETY OF NEW JERSEY: "We hope that every physician in our state will read, mark, learn and inwardly digest this report. . . . To our mind there can be no doubt of the issue of this vexed and troublesome question if the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the editors of the state journals stand firmly on the ground laid out for them and scrupulously adhere to the excellent code of rules we have referred to."

WESTERN DRUGGIST (March): "The American Medical Association has finally undertaken a work which for many years engaged the serious attention of the American Pharmaceutical Association, but whether or not it will not meet with better success remains to be seen. . . . It is exceedingly doubtful if the proprietors will deliberately comply with this request, even though they have been accustomed heretofore to publish essentially the ingredients of their respective preparations, for the reason that the recognition by them of the principle of censorship would logically lead to enforced compliance with any further conditions now or hereafter to be imposed by the council. The 'community of interest' among the manufacturers will certainly prompt them to view with suspicion the creation of an official outside authority over their products and, knowing that unless the more popular preparations now in use by the profession shall place themselves under the council's censorship the entire scheme must of necessity fall through, they will be slow about entering the seductive little parlor of the council. . . . Few manufacturers, we imagine, will deliberately tie themselves up to perpetual accountability to a group of critics who may or may not be governed at all times by infallible intelligence or by recognized principles of mercantile equity."

MEDICAL NEWS, N. Y. (March 18): "There was a time in the history of medicine when the physician was chemist, botanist, pharmacist and healer. But that was many, many years ago. Since that time social relations have become very complex, but none more so than the relations of pharmacy to medicine.

"From time to time certain features that concern the medical profession very closely have received no small amount of criticism on the part of reformers, and sporadic attempts have been made to adjust certain questions which have been deemed prejudicial to the best interests of medicine. One of these problems has concerned the ethical stand that the profession, as a whole, should adopt toward the exploitation of proprietary remedies. At first sight it seems an easy problem to solve, but in reality it has shown itself to be one of extreme difficulty to grasp in its entirety. A beginning, however, has to be made, and the most radical step that has thus far been contemplated has been recently outlined by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (March 4, 1905). Writing on 'The Secret Nostrum vs. the Ethical Proprietary Preparation,' it plunges at once into one side of the subject with a courage that deserves praise and an insight that commands the highest respect for its intelligent grasp of an intricate social question.

"That we as practicing physicians need light there is not the slightest doubt, and we welcome most heartily the effort on the part of THE JOURNAL to pull our chestnuts out of the ethical fire."

WISCONSIN MEDICAL JOURNAL (March): "The Council on Pharmacy and Chemistry of the American Medical Association, which is composed of some of the best known chemists and pharmacologists of this country, is about to make an effort to solve the vexed problem of separating the wheat from the chaff among the many non-official pharmaceutical preparations placed on the market. . . . The plan outlined by this council will doubtless prove of very great service to the entire profession."

Misleading Statements Concerning Proprietary Remedies.

The article of Dr. Roth[1] on clay mixture poultices should serve to call attention to a widespread evil—the misleading statements in the "literature," distributed so generously by the manufacturers of proprietary products. It is an evil which is much more general than is commonly appreciated. Some of these misstatements are absurd on their face—such as the claim "to cure tuberculosis," the claim that a mushroom product is the "standard" of its kind, etc. Such statements should deceive no one; they should be recognized as an insult to our intelligence. Others, however, are invested with a veil of pseudo-scientific plausibility. These do by far the greater harm, for it is not always easy to perceive the wolf under the sheepskin. The published formulas of the clay mixture referred to in Dr. Roth's paper would lead one to believe that its efficiency depended largely on the essential oils or on the added antiseptics. These, however, are present in such infinitesimally small quantities that they can play but a very unimportant part in the action of the mixture when applied to the unbroken skin. The base, clay or kaolin, is also suggested as an important constituent of the mixture, but even this, apart from its mechanical action, does not constitute an essential part of the mixture. As any quality of clay will answer equally as well, it will be readily seen that there can be no specific therapeutic property in the clay used by any one firm. The most important constituent of the mixture, and the one on which its action largely depends, is anhydrous glycerin, or a glycerin that is as nearly anhydrous as possible. The glycerin in these mixtures is not added "to give the kaolin or white clay its thick jelly-like consistency," but is added for a definite purpose. It has long been known that glycerin, as such, is irritating when applied to the skin; this irritating action is due to the hygroscopic nature of this substance, or "the avidity with which it abstracts moisture from the tissues." While this action of glycerin has been recognized, and is made use of in other directions, its oversight in connection with the widely advertised clay mixtures well illustrates how little proprietary medicines really contribute to the progress of rational, scientific therapeutics.

The clay poultice, however, is not the only offender. There are many, many others—although in some the error is not so palpable. Dr. Roth's investigations, however, should serve to enlighten those who obtain their knowledge of materia medica and therapeutics from the manufacturers of proprietary remedies, and should warn the profession generally against an unquestioning acceptance of manufacturers' claims.

We believe that the condition would soon be remedied if those who encounter misleading advertisements would protest to the manufacturers. We fear, however, that few will take the trouble. A reform could be brought about most readily if the manufacturers themselves would take the initiative. We may be optimistic, but we trust that these misleading claims are made through carelessness; and we respectfully urge the manufacturers to be a little more conservative in their statements. This would be to their own interest. The houses which have not offended in this respect have always been the most prosperous. Let the products stand on their real merits. Clay poultices may be excellent things in their place, but extravagant claims will injure, not enhance, their permanent reputation.

"Patent" vs. Proprietary Medicines.

The avowed intention of several of the largest and most influential manufacturers of so-called patent medicines to

1. THE JOURNAL, April 15, p. 1185.

publish the, supposedly correct, formulas for their several preparations will prove of considerable assistance to the Council on Pharmacy and Chemistry of the American Medical Association in the prosecution of their proposed task of segregating the meritorious from the doubtful or positively objectionable proprietary preparations that are offered to, or exploited through, the medical profession. The direct gain, in this connection, consists in the breaking down of any possible suggestion of difference between the standing of a so-called proprietary medicine, for which the manufacturer publishes an erroneous and frequently misleading formula, and the standing of a patent medicine, or popular nostrum, the composition of which is usually regarded as the absolute secret of the manufacturer. Few physicians appear to appreciate how closely related many of these proprietary preparations really are to the admittedly vicious and frequently harmful nostrums that are exploited directly to the lay public. Lay people themselves are much more likely to see and to appreciate this relationship than physicians. That this is true is evidenced by the extensive use of many of the present-day proprietary medicines by the laity and also by the fact that a number of the best selling and most remunerative patent medicines of to-day were originally advertised to and exploited through the medical profession. The letters contributed by honest and well-meaning physicians, one, two or three decades ago, recommending the use of a proprietary medicine are published now in the patent medicine almanacs as evidence that the particular remedy has been used and recommended by medical practitioners. The compounds, elixirs, tonics, syrups and balsams of a quarter of a century ago are being reproduced today in the fantastically named preparations that are exploited through, and are used and recommended by, members of the medical profession only to be taken up later and sold directly to the laity for self-medication.

Correspondence

Malpractice Insurance and Medical Defense.

FORT WAYNE, IND., April 11, 1905.

To the Editor:—In THE JOURNAL, April 1, 1905, is an editorial commenting on the recent opinion of Attorney-General Mullan of Iowa in which he held that "physicians can not take out insurance in that state against malpractice suits." You state that "considering the fact that probably nine-tenths of all malpractice suits are pure blackmail, instigated by quacks and foraging lawyers, the finding seems to be a peculiar one." The opinion does not seem to us a peculiar one. It is the only rational opinion which could have been rendered, and but confirms the opinions of attorneys general of a number of other states.

The "physicians' liability policies" issued by casualty insurance companies purport to defend any malpractice suit brought against the policy holder, and in the event of a judgment being rendered against the physician, to pay the same within the limits provided in the policy. This indemnity feature of the insurance contract makes it against public policy. The policies are written and the subject is treated by the insurance company as an "accident." It is through this misapprehension of the subject that the insurance companies began the issuance of such policies.

Malpractice is not an "accident." The courts have held: "An accident is defined as a happening of an event without the aid and design of a person and which is unforeseen, and in this sense the word is to be understood in the absence of a plain, unequivocal exemption and provisions, in a policy insuring against injury or death caused by accidental means." Malpractice is the "bad professional treatment of disease, pregnancy or bodily injury, from reprehensible ignorance or carelessness, or with criminal intent."

If a physician charged with malpractice can show that the injury complained of was the result of an accident, a result not to be expected and for which, therefore, he could not prepare, or, if possessing the requisite qualifications and applying his skill and judgment with ordinary care and diligence, an honest mistake or error of judgment occurred, he can not be held liable, be the results what they may. The medical practitioner is not an insurer or a guarantor of results. All that he is required to do is to bring to his assistance the ordinary knowledge, learning and skill possessed by the average practitioner in similar localities and to exercise his best judgment. If, however, he is incompetent, and does not possess the ordinary knowledge and skill of the average practitioner, or if he is negligent or unskillful in rendering his services, or fails to exercise his best judgment and injury results, he can be held responsible in damages.

Indemnity, therefore, is not a protection to the reputable, competent and careful practitioner. Possessing the requisite knowledge and skill, applying his skill and judgment with ordinary care and diligence, he can not be held liable for any untoward results. What he does need when assailed by the blackmailer under the guise of malpractice is a vigorous and competent defense which will vindicate his diagnosis, treatment and work. For the negligent, incompetent, unskillful and quackish practitioner, indemnity is a *multum in parvo*. Having no professional reputation at stake and practicing strictly for the money there is in it, he will undertake to render services for which he is incompetent and unprepared, will guarantee results and can even neglect with impunity his patients, relying on the insurance company to pay the bill.

The state holds as its most valued possession the health of its citizens, and anything which will have a tendency to relieve one from responsibility imposed by common law or statute in the treatment of disease or injury, is against public policy. Organized defense is recognized as not being against public policy, but as a necessity for reputable practitioners. This fact is shown in the admission and authorization of the Physicians' Defense Company as a foreign corporation in Iowa. Before this company received its certificate of authority from the secretary of state of Iowa, the attorney general reviewed its charter and the defense contracts which it issues, and rendered his opinion that the company is not an insurance company, that its contracts are not insurance policies, and that it could be admitted as a foreign corporation and that its contracts for the defense of physicians, surgeons and dentists are legal contracts under the laws of Iowa.

From the foregoing it is clear that while Attorney-General Mullan's opinion holds the issuance of "physicians' liability policies" to be illegal under the law on account of the payment of judgments, yet the state is not opposed to organized defense.

E. H. MERRITT.

History of Medical Organization.

BURLINGTON, IOWA, April 16, 1905.

To the Editor:—In "An Epitome of the History of Medical Organization in the United States," published in THE JOURNAL, April 15, I note a statement concerning Iowa which may be misleading and I ask space for this, a more explicit account.

Section 4954 of the revised statutes of Iowa (code of 1897) is the "nasty ad." law referred to. It is almost identical in language with section 5337 of the code of 1880. Whether the Iowa State Medical Society was instrumental in having this law made I can not say, because I was not a member until 1880. Some of the older men may be able to tell you, but that the members generally were ignorant of its existence can be seen by reference to the October and December, 1903, issues of the *Iowa Medical Journal*. In the latter I have a letter on this subject, in reply to an editorial entitled "As Others See Us."

That there have been violations of this law there can be no doubt, but I have yet to hear of an attempt to enforce it.

Membership in the Iowa State Medical Society prior to 1903 was acquired only through membership in an affiliated county or district society. Of the former there were in 1897 sixteen listed as having made official reports of conditions; of the latter, eight. There were other societies of both kinds, some

of them large and active, as, for example, the Des Moines Valley. The district societies embraced many counties not individually organized, and thus the ground was well covered; so it is not impossible that the increased membership of to-day comes more from the "drumming up" process, which I vainly urged in 1893, than from lack of facilities. Iowa, as Dr. Hobby pointed out to you last year, has for years been largely represented in the American Medical Association meetings, second to very few, and this of itself should be sufficient answer to the critic. H. B. YOUNG.

Cerebrospinal Meningitis in Animals and in Man.

HUMBOLDT, TENN., April 8, 1905.

To the Editor:—I have just read Dr. Albert's letter in THE JOURNAL, April 8, p. 1132, on the identity of meningitis in animals and man. This is an interesting and important subject, especially as the question of contagion is beginning to receive the attention it should have had long ago. I am not familar with the disease in the cow, but I have seen a few cases in man and in horses and have long been impressed with the idea that the disease is the same in both. The disease in the horse is known in this locality as "blind staggers" and there is a popular impression that the horse contracts the disease from eating the "chaff" of old corn, and as it is undoubtedly more common about the time the farmers are cleaning out the corn-cribs preparatory to housing the new crop, it may not be unlikely that the dust inhaled in eating the "chaff" contains the germs; and, again, it may not be going too far to suppose that the germs are deposited in the dust by the rats, to the gnawing of which the "chaff" is mainly due. However this may be, if the unity of the disease is established, it may account for some of the heretofore unaccountable sporadic cases in man, and may help solve the problem of prophylaxis. This is merely a suggestion and is offered for what it is worth. SIDNEY THOMPSON, M.D.

Association News

ROUTES TO THE PORTLAND MEETING.

Sketch of the Western Country and the Various Routes By Which to See Its Beauties.

All railroads will lead to Portland, Ore., for the coming session of the American Medical Association, on account of the Lewis and Clark Exposition that opens there June 1; and, therefore, a choice of routes will be available such as is not often possible, with side-trips and stop-over privileges practically according to each traveler's inclinations.

For the purposes of this article, we may class the various routes to Portland as direct and indirect, the former being all those on which the short-line rate will prevail, the indirect those which will carry the traveler a round-about route but at an additional railway fare. The latter, for example, permit the passenger for Portland to travel through California either going or returning, the other part of the trip to be by one of the direct lines. The principal routes are shown on the accompanying map.

By the direct routes, Chicago, St. Louis and Memphis passengers for Portland, or parties from points in the East or South ticketed through either of these three gateways, may, at their option, be routed through St. Paul and Minneapolis and thence to Portland via either the Canadian Pacific, the Great Northern or the Northern Pacific railways; or through Omaha or Kansas City, thence through Denver or Cheyenne and Salt Lake City, thence via Ogden, Utah, and Pocatello, Idaho (not via California from Ogden); or through Omaha or Kansas City and thence via Billings, Mont.

Without extra fare, the western or outgoing trip may be made by any of these so-called direct routes and the return by the same or any other of the direct routes; or one way may be by one of the indirect routes, as said above, by paying an additional charge, but the desired route must be determined on before buying the ticket so that the latter may be made out accordingly.

DIRECT ROUTES VIA ST. PAUL.

Tickets may be routed over any one of the lines between Chicago and St. Paul at the passenger's option, these being the Northwestern Line; the Chicago, Milwaukee and St. Paul; the Chicago, Burlington and Quincy; the Wisconsin Central; the Chicago, Rock Island and Pacific; the Illinois Central, and the Chicago Great Western. Any of these offer satisfactory service and picturesque scenery. After reaching St. Paul the traveler via this gateway has choice of but three routes from there to Portland, the Great Northern, the Northern Pacific or the Canadian Pacific, some of the advantages of these lines being given below:

The Great Northern Railway, which lies nearest the northern boundary of the United States, takes first a northwesterly direction from St. Paul, along the west bank of the Mississippi River, across the lake region of Minnesota, which offers some of the finest fishing grounds in this country, then up the famous Red River Valley to Grand Forks, N. D., whence the line takes a more westerly course across the agricultural and stock sections of northern North Dakota and Montana to the Rocky Mountains. Thence is afforded a continuous panorama of grand and magnificent scenery through northwestern Montana, where, at an altitude of only 5,199 feet, the range is crossed, the route then being across northern Idaho to Spokane, Wash., whence it proceeds west via the far-famed irrigation sections of that state—the Great Bend Country and the Wenatchee Valley—crossing the Columbia River at Wenatchee, to traverse the famous Tumwater Canyon and on through timber and lumber sections across the Cascade Range to Everett, where Puget Sound is reached. Here the line turns south and parallels the sound to Seattle. In the Rocky or Cascade mountains, various points afford excellent hunting and fishing stop-overs. The famous Kootenai Lake region and the mining sections of Rossland and Nelson, B. C., may be reached from Spokane; the noted Lake McDonald country and its glaciers, from Belton, Mont., and beautiful Lake Chelan and the Methow Valley from Wenatchee, Wash.

The Northern Pacific Railway, paralleling in general direction the Great Northern, between St. Paul and Puget Sound, enters North Dakota at Fargo, keeping thence nearer the southern line of the state, crossing the noted "Bad Lands" and following the Yellowstone River in Montana to Livingston. Then, via Butte or Helena, at the passenger's option, it crosses the famous Bitter Root Valley and the Flathead country and the mountain and lake region of northern Idaho to Spokane—a continuous stretch of magnificent scenery from Livingston west. From Spokane, this line takes a southwesterly direction through southeastern Washington's agricultural sections and across the far-famed Yakima Valley, where it turns northwest to climb the Cascade Range and to traverse—before reaching Seattle to turn south to Portland—some of the most extensive and interesting timber and lumber sections of the Northwest. Here may be seen the lumber industry at its best, and here, too, are hunting and fishing regions easy of access and unsurpassed, while Spokane offers many inducements as a stop-over point, with the hunting and fishing sections of northern Idaho most easily reached therefrom. From Livingston, Mont., over a branch line to Gardiner, is made the side trip to the Yellowstone National Park, whose wonders and scenic attractions will many times repay for the time spent and the additional expense incurred in making the five and one-half day tour through it.

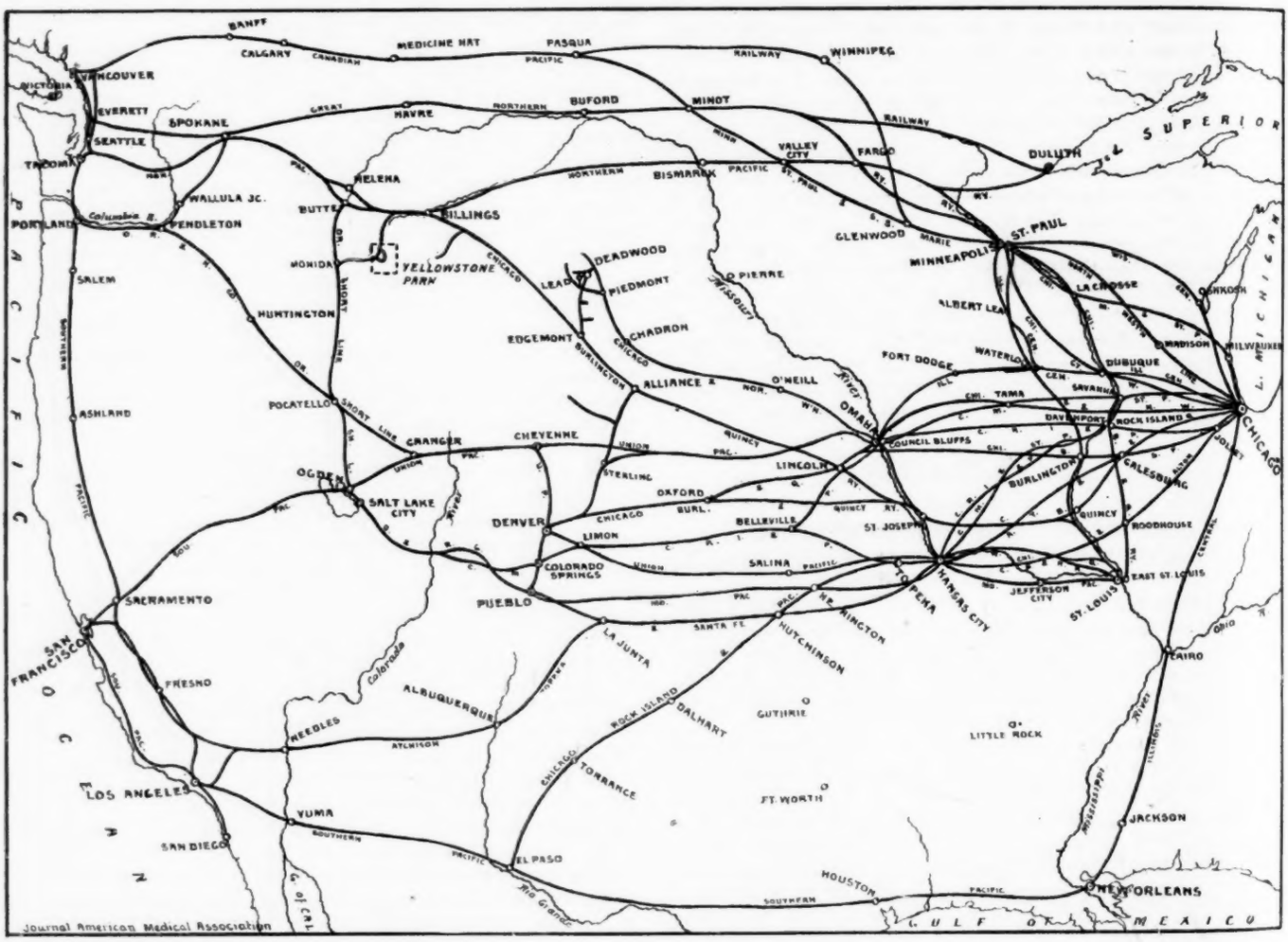
The Canadian Pacific has as grand mountain scenery as is to be found anywhere in the world, unapproachable in magnificence and majesty, and for two days are to be seen panoramic views of mighty mountains, wonderful cascades, great glaciers, and awe-inspiring canyons. The pleasures of the trip will be greatly enhanced by stop-overs at Banff, in the Canadian National Park; at Lake Louise, one of the most charming lakes in the world; at Field, the entrance to Yoho Valley; and at Glacier, where is located the Great Glacier of the Selkirks, larger than all the glaciers of Switzerland combined. By this route passengers are given the option of traveling through Puget Sound without extra cost if a water trip is preferred to all rail.

DIRECT ROUTES VIA OMAHA.

The railway lines that connect Chicago and St. Paul, noted above, also operate between Chicago and Omaha, each offering excellent service. Two, the Burlington and the Rock Island, have their own tracks from Chicago to Denver, and the Burlington also offers its own line to Billings, Mont., from which point its trains run to Seattle over the Northern Pacific Railway. The Chicago, Union Pacific and Northwestern Line has a daily service direct from Chicago to Portland without change.

Passengers using any other of the Chicago-Omaha lines may be ticketed to travel via any of the lines west from Omaha, at their option, these lines being the Burlington, the Rock Island and the Union Pacific. Each of these affords excellent service between Omaha and Portland via Denver and Salt Lake City, via Denver and Cheyenne and Salt Lake City, or via Granger, Wyo., and Pocatello, Idaho, to visit Salt Lake City, and free tickets from Ogden to this Mormon center are furnished. From either Ogden or Pocatello a side trip may be made to the Yellowstone National Park, the stage trip by this route through the park being made from Monida, near its western boundary. From Umatilla, Ore., this route follows the Columbia River into Portland, affording a scenic panorama of crags, mountains, gorges and rivers that probably has few if any equals; and from the Dalles passengers may make the remainder of the trip down the river by steamer, though the train parallels it. From Hood River, snow-capped Mt. Hood is easily reached, with its unsurpassed opportunities for hunting, fishing and mountain climbing.

The Denver and Rio Grande Railway, between Denver and Ogden, offers mountain scenery that is unsurpassed anywhere in the United States. Extending south from Denver through Colorado Springs to Pueblo, paralleling the Rocky Mountains,



Cheyenne direct (main line of Union Pacific); or via Billings, Mont. From Denver to Portland the passenger has the further choice of traveling to Portland via either the Denver and Rio Grande, the Colorado Midland or the Union Pacific, via Salt Lake City, Ogden and Idaho. A few of the special points of interest along these three lines are mentioned below:

The Union Pacific makes especial boast of fine trains and fast time. By this route's main line from Omaha one crosses from the range sections of western Nebraska into southern Wyoming, where at Cheyenne the Denver portion of the train is added. Then the line continues westward near the Colorado-Wyoming boundary, crossing into Idaho, to traverse, beyond Pocatello, some of the most extensive irrigation sections in this country. Shoshone or Boise are good points for stopovers for study of these systems, and from the former the Thunder Mountain country may be visited. Portland passengers on the Union Pacific may travel via Ogden, between it then follows the Arkansas River in a northwesterly direction, to enter the mountains through the far-famed Royal Gorge, whose perpendicular sides tower 2,700 feet above the river and roadbed which crowd each other in this narrow defile that has no scenic equal. A stop at Canon City, the heart of one of Colorado's fruit valleys, will be repaid in a drive to the top of the Royal Gorge. From Salida to Grand Junction, optional routes are offered by this line, one over Marshall Pass, the other, the main line, through Leadville and over Tennessee Pass, where the line crosses the range at an elevation of 10,243 feet, thence follows the Canyon of the Grand River through Glenwood Hot Springs and on to Salt Lake City and Ogden. From Ogden the Portland equipment is carried on Union Pacific trains, via Pocatello, Idaho, as outlined above for that road.

The Colorado Midland Railway, the other route offered through Colorado, parallels the Rockies to Colorado Springs

and Manitou, where its westward climb is begun via Ute Pass. Stop-overs at either of these points, for the trip up Pike's Peak by the famous cog railway, will give wonderful scenic views, while the trip to the Cripple Creek district, made by the short line from Colorado Springs, is said to have no scenic equal anywhere. From Divide, on the Midland, the Cripple Creek district may also be visited before continuing westward over Hagerman Pass, past the Collegiate Range and Glenwood, beyond which the Midland and the Rio Grande routes traverse the same country, through Salt Lake City to Ogden. Glenwood offers much of interest to the physician, by reason of its hot springs, vapor caves, etc., and it is, besides, a convenient starting point for hunting and fishing trips into Colorado's well-known game sections. Colorado Midland equipment for Portland is also carried, beyond Ogden, on Union Pacific trains, through Idaho.

DIRECT ROUTES VIA KANSAS CITY OR ST. JOSEPH.

Between St. Louis and Kansas City or St. Joseph similarly excellent service to that via St. Paul or Omaha is offered by the following lines: Chicago and Alton; Chicago, Burlington and Quincy; Missouri Pacific; Chicago, Rock Island and Pacific, and the Wabash.

Between Chicago and Kansas City the same lines operate—except the Missouri Pacific—and in addition the Santa Fe, the Chicago, Milwaukee and St. Paul, and the Chicago Great Western.

From either point Portland passengers may travel via the Kansas City or St. Joseph gateway, if preferred, then through Denver, Salt Lake City and Ogden, Cheyenne and Ogden, or through Billings. Such routings will be, beyond Denver, by one of the lines noted above under Omaha routings through Denver, etc. Salt Lake City and the Great Salt Lake, aside from its interest as the center of Mormonism, will prove one of the most interesting of the stop-overs available to those traveling to Portland via Denver, either of the three lines between Denver and Portland carrying passengers via this city. For that portion of the journey between Kansas City and Colorado, one has choice between the Burlington, the Rock Island, the Santa Fe, the Missouri Pacific and the Union Pacific, the first three having their own lines from Chicago to Denver via Kansas City, the first two and the Missouri Pacific their own lines from St. Louis to Denver via Kansas City.

DIRECT ROUTES VIA BILLINGS, MONT.

The Burlington Route operates through trains between St. Louis and Seattle, with connections at Lincoln, Neb., from Chicago and Omaha, and at St. Joseph from Kansas City. West of Billings these trains use the Northern Pacific track to Seattle. On this route the famous gold mining sections of the Black Hills may be visited by a side trip from Edgemont, S. D., and the Big Horn Basin from Toluca, Mont. The Custer Battlefield is crossed near Billings, and west of that city the points of interest are those mentioned for the Northern Pacific.

INDIRECT ROUTES.

These are the routes by which the Portland passenger is carried through California either on the outgoing or on the return portion of the trip, an extra fare being charged therefor, with the requirement that the other portion of the trip shall be by one of the direct routes. As the majority of physicians in attendance on the Association session will doubtless make the return portion of the trip by the indirect routes, if at all, these are taken up here with Portland as their starting point rather than their terminal. But, as exposition tickets will be on sale late in May and also in June, with a 90-day limit, physicians who prefer to start in advance of the meeting time and to use one of the indirect routes on the going trip, will be able to do so, the only requirement as to the ticket's limit being that the return to starting point be in 90 days from date of starting.

All the indirect routes lead through California, and may be by boat or rail between Portland and San Francisco; and from the latter city the route may be eastward across Nevada and through Ogden, thence via any of the lines mentioned under direct routes, to destination: or from San Francisco the ticket may read via southern California, and to destination by any of the southern lines, as noted below.

The Southern Pacific, the only rail route from Portland to California, offers some of the most magnificent scenery in the west, traversing Oregon's far-famed Willamette and Rogue River valleys, the latter renowned for its fruits, crossing the rugged Siskiyou Mountains on the Oregon-California boundary, skirting the base of beautiful Mt. Shasta, whose snow-capped summit remains visible for hours as the train wends its way down the picturesque Sacramento River toward the Golden Gate. For climbing Mt. Shasta, stop should be made at Sisson. Shasta Springs is one of the most charmingly located resorts and offers many attractions for a stop-over, as do numerous other less notable summer resorts along the upper canyons of the Sacramento River.

To the traveler eastward from San Francisco, via Ogden, the Southern Pacific is again the only line, but this division offers excellent service and 200 miles of superb scenery before the Sierras are crossed and the Great American Desert entered in Nevada. From Truckee, near the summit of the Sierra Nevada Mountains, one of the most interesting trips in the West may be taken, in a side trip of twelve miles by rail, up the Truckee Canyon to beautiful Lake Tahoe, a mountain lake twenty-five miles long and twelve miles wide, at an altitude of 6,000 feet and surrounded by mountain peaks still higher, some snow-capped, its waters as clear as crystal, its setting making it, as said by many, the most beautiful mountain lake in America. A steamer plies between the various points of interest, and there are good hotels, with hunting, fishing and mountain climbing.

The routes available to the passenger who desires to go via southern lines from San Francisco are several, but for the part of the journey in California, three, the Santa Fe, the Rock Island, and the Southern Pacific. The former runs via the San Joaquin Valley and Mojave, then through Arizona and Albuquerque, N. M., the latter either by the San Joaquin Valley or its Coast Line to Los Angeles and El Paso, and on to New Orleans; the Rock Island runs via Los Angeles, using Southern Pacific tracks to El Paso, whence it takes a northwesterly course through southern New Mexico to eastern termini. Further optional routes are available east of El Paso, if the passenger prefers to travel through Fort Worth, San Antonio or Dallas, thence via any of the numerous lines through St. Louis, Kansas City or Chicago. Tickets routed through New Orleans may be over any one of the several lines north and east of that city, at the option of the passenger. Hot Springs, Ark., Eureka Springs and other well-known health resorts along these various lines will offer stop-overs of interest.

Between San Francisco and Los Angeles, via the Coast Line of the Southern Pacific, one crosses the Santa Clara Valley, the prune section of the state, to San Jose, then follows the coast to the "flower town"—Santa Barbara—and through the bean and walnut sections to Los Angeles. Palo Alto is the station for visiting the Leland Stanford, Junior, University, and from San Jose the ascent to the Lick Observatory may be made. In visiting the Santa Cruz big trees, which are big redwoods, these should not be misunderstood to be the "really big trees," for the big trees of California and the world are the sequoias found in the Sierra Nevadas and easily reached from points on the Santa Fe or the Southern Pacific's San Joaquin Valley line (see below). The old mission at Monterey, and the eighteen-mile cypress drive along the beach, will more than justify a stop, and at various points other old missions may be visited. The points of interest along the other line of the Southern Pacific to Los Angeles, the route through the San Joaquin Valley, are those mentioned in connection with the Santa Fe below, these roads covering the same territory through that portion of the state.

Rock Island passengers between San Francisco and El Paso, as noted, traverse Southern Pacific territory, hence the attractions of the two routes are the same as far east as El Paso. Southern California offers every variety of scenery—valley, mountain and beach—and desirable stop-over points too numerous to enumerate here. After leaving the Orange Belt of the state, its trains cross the Colorado Desert into Arizona,

where Phoenix and the Salt River Valley will prove of especial interest on account of their reputation as health resorts. Side trips into Mexico are easily made from El Paso; in New Mexico the government sanitariums for tubercular sailors and soldiers, at Ft. Bayard and Ft. Stanton, may be visited.

The Santa Fe System from San Francisco or Los Angeles to Chicago offers many attractions. Crossing the San Joaquin Valley, the wheat and grape section of California, intensive irrigation is seen at its best. No mountains offer a greater variety of easily arranged outings, by wagon road or trail, than the Sierras, reached from various stations in the San Joaquin Valley, the grandest of these being the Yosemite trip and that into Kings River Canyon. Stage lines into the marvelous Yosemite Valley, whose scenic attractions are unique and have no parallel elsewhere, make that side trip easy and comfortable. When the trip is made one way via the big trees, it is doubly interesting and attractive. Continuing east from California, this line crosses northern Arizona. A stop should be made at Williams, whence the Grand Canyon of Arizona is visited—that "titan of chasms" that is said to have no equal anywhere in the world—213 miles long, 12 miles wide and more than a mile deep, through which runs the turbulent Colorado River. Other stop-overs for the petrified forest, or various long-ago-deserted Pueblos whose fascination is added to by the mystery that surrounds their history, are permitted, and in addition visits may be made to the Navajo, Moki and other Indian reservations (the Moki's famous snake dance occurs in August). In New Mexico a side trip to the quaint old town of Santa Fe will be well worth while.

Railroad Rates.

The Committee on Transportation desires to submit the following rates which have been secured for the next annual session of the American Medical Association to be held in Portland, Oregon, July 11-14, 1905.

To Portland, Oregon, going via any regular direct route; returning via same or any other regular direct route: From Missouri River points; Sioux City, Iowa; Omaha, Neb.; Council Bluffs, Iowa; Pacific Junction, Iowa; Atchison and Leavenworth, Kan.; St. Joe and Kansas City and Missouri, $45.00. From St. Paul and Minneapolis, $45.00. From Chicago, $56.50. From St. Louis, $52.50. From New Orleans, $62.50.

To Portland, Ore., going via any regular direct route, returning via San Francisco or San Francisco and Los Angeles, and regular direct routes therefrom, or vice versa: From Missouri River points, $56.00. From St. Paul and Minneapolis, $63.00. From Chicago, $67.50. From St. Louis, $63.50. From New Orleans, $71.00.

From all points east of Chicago and St. Louis, the rate will be one fare plus $1.00 added to the rates above given. These tickets will be on sale on June 1, 2, 13, 14, 15, 19, 23, 24, 27, 28, 29, 30, July 1, 2, 3, 6, 7 and 8. These days apply to the points above mentioned. For points east of Chicago and St. Louis the date of sale will be advanced sufficiently to enable passengers to reach the points mentioned on any of the days specified. Tickets will be good for ninety days from date of sale, but not later than Nov. 30, 1905.

Going passage must begin on date of sale and must be continued up to first Colorado, Wyoming, Texas or Montana point en route and up to Alliance, Neb., and Ft. Williams, Ont. West thereof stopovers may be made at any point up to destination within final limit of ticket. Returning, passage must begin on date of execution. The joint agent at destination will execute tickets by attaching validation certificates thereto.

Returning stopovers will be allowed within final limit at any point west of the points mentioned above. While conditions governing stopovers are not complicated they vary somewhat and had best be learned of the joint agent by each purchaser at the time tickets are purchased or validated.

The above rates are the best which the Association has ever secured, and are so liberal that every member ought to attend this meeting and take his family for a summer's vacation in the Great West.

M. L. HARRIS.
Chairman Committee on Transportation.

Announcement from Portland Committee.

The committee desires to report that all arrangements for the meeting are progressing rapidly. The meeting places for the general assembly and for the special sessions and the exhibition hall are all situated within a radius of a few blocks and only a few minutes' walk from each other and from the hotels.

Hundreds of applications for rooms have been received and all such applicants will be definitely and comfortably located before arrival, so they will know just where they are to be.

Numerous applications for the Alaska trip and also for the trip to the Orient have been received and we would urge all who desire to make these excursions to let us know at the earliest possible moment, as our arrangements depend on the numbers. We will probably be able to obtain a $60 rate for the Alaska trip.

KENNETH A. J. MACKENZIE,
Chairman Committee of Arrangements.

Yellowstone Park-Portland-California and Colorado Special Train.

The arrangements are about completed for the special train party which is being organized to leave New York City Saturday, June 24, for a forty-day trip to the Yellowstone Park (six and one-half days), and Pacific Slope, in connection with the annual meeting of the association to be held at Portland July 11 to 14. The following is the condensed itinerary: Chicago, St. Paul, Lake Minnetonka, Yellowstone Park, Butte, Tacoma, Seattle, Portland, Columbia River, San Francisco, Mt. Tamalpais, Monterey, Santa Barbara, Los Angeles; Santa Catalina Island, Mt. Lowe, Riverside, Redlands, Lucky Baldwin's Ranch, Salt Lake City, Salt Air, Royal Gorge, Glenwood Springs, Manitou, Pike's Peak, Cripple Creek, Garden of the Gods, Denver, Georgetown Loop, Kansas City, St. Louis, Niagara Falls. The party will be limited to one hundred and twenty-five persons and as nearly one hundred names have already been secured it is most important that those desiring to join this excursion should communicate at once with Dr. Frederick Holme Wiggin, 55 West Thirty-sixth street, New York City. Railroad rates are given elsewhere.

St. Louis Delegation to Portland.

The Committee of Arrangements for the Portland session of the American Medical Association, appointed by the St. Louis Medical Society, has decided on the Burlington and Northern Pacific railroads for the out trip. The delegation will go in two parties, one leaving St. Louis June 27 and visiting the Yellowstone and Puget Sound on the out trip, the other leaving July 6 and going direct to Portland. Neither party is entirely filled as yet. Reservations should be made without delay through the committee. A considerable range of routes for the return trip is at our command. The committee consists of Dr. T. A. Hopkins, chairman, 319 Century building, and Drs. J. H. Tanquary and R. E. Schlueter.

Marriages

SAMUEL G. KELLY, M.D., to Miss Ethel Roemer, both of Sedalia, Mo., April 18.

THOMAS KEAN, M.D., to Miss Lillie Casey, both of Providence, R. I., March 23.

JAMES H. GREEN, M.D., to Miss Cora Lea Hinds, both of Guntown, Miss., April 12.

JOSEPH PAYNE, M.D., Midland, N. J., to Miss Edith Reader of Pittsfield, Mass., April 17.

JAMES FISHER, M.D., Dixonville, Pa., to Miss Amy F. Kane of Washington, D. C., April 5.

AUSTIN JAMES KEMP, M.D., Allapaha, Ga., to Mrs. Daisy Henderson of Leslie, Ga., April 6.

FREDERICK OAKMAN VIRGIN, M.D., to Miss Florence Soria, both of New York City, April 13.

SOLON L. COLEMAN, M.D., to Miss Willie Tisdale Hudson, both of Uniontown, Ala., April 4.

HIRAM H. GUNBY, M.D., to Mrs. Sallie R. Paterson, both of Crisfield, Md., at Philadelphia, April 6.

D. LEWIS, M.D., Portland, Ore., to Miss Camille Gunlach, daughter of Dr. Louis W. Gundlach of Blaine, Wash., March 18.

ABNER OSBURN ALBIN, M.D., of Charlestown, W. Va., to Miss Gertrude Cornelia Show of Shepherdstown, W. Va., April 12.

Deaths

Jarvis King Mason, M.D. Harvard University Medical School, Boston, 1861, medical examiner for the town of Suffield, Conn., for 22 years, and once president of the Hartford County Medical Association; a member of the Harvard Alumni Medical Association and of the American Academy of Medicine, died at his home in Suffield, April 8, from cerebral hemorrhage, aged 73.

Julian Taintor Williams, M.D. Castleton (Vt.) Medical College, 1851, a member of the Dunkirk (N. Y.) Board of Education for 46 years, and its president for 26 years; for four terms representative in the House of Assembly; editor of the Dunkirk *Evening Observer*, died at his home in Dunkirk, April 10, from cerebral hemorrhage, after an illness of three weeks, aged 75.

John Waterman Harris Baker, M.D. Dartmouth Medical School, Hanover, N. H., 1843, for 50 years a practitioner of Davenport, Iowa; assistant surgeon of volunteers during the Civil War; formerly secretary and president of the Iowa State Medical Society, died at his home in Davenport, April 7, from senile debility, aged 83.

Loren True Day, M.D. Yale University Medical Department, New Haven, Conn., 1880; health officer of Westport, Conn.; president of Fairfield County Medical Society in 1900; a member of the Connecticut Medical Society, died at his home in Westport, April 1, from tuberculosis of the lungs after a long illness, aged 48.

John Gordon Stewart, M.D. College of Physicians and Surgeons, Baltimore, 1882, of Pitcairn, Pa., a member of the American Medical Association; one of the most prominent practitioners of the Turtle Creek Valley, died in Mercy Hospital, Pittsburg, April 9, after an operation for intestinal disease, aged 53.

Herbert W. Cardwell, M.D. Medical Department of Willamette University, Salem, 1887, a member of the American Medical Association, surgeon-general Oregon National Guard, 1895-1898; major and surgeon U. S. Volunteers 1898 to 1901, died recently and was buried from his residence in Portland, April 5.

Hector McNeill Grant, M.D. Louisville Medical College, of Helena, Ark., surgeon in the Confederate service during the Civil War; several times mayor of Helena, and four times state senator, died at the home of his daughter in Clarksdale, Miss., April 6, after a long illness, aged 82.

Samuel Gregg George, M.D. Medical College of Ohio, Cincinnati, assistant surgeon of Ramsey's Company, First Regiment, Ohio Volunteers, in the Mexican War, and thereafter a resident of California, died at his home in Porterville, April 3, after a short illness, aged 91.

Robert K. Carter, M.D. Jefferson Medical College, Philadelphia, 1858, of Stephens City, Va., a surgeon in the Confederate service during the Civil War, died in New York City in December last from nephritis, after an illness of five months, aged 68.

Andrew D. Hawley, M.D. Medical College of Ohio, Cincinnati, 1848, one of the founders of the Union District Medical Society, and a pioneer of Butler County, Ohio, died at his home in College Corner, March 31, from senile debility, aged 81.

Moses S. Hall, M.D. Examination, W. Va., of Harrisville, for half a century a practitioner of Ritchie County, W. Va., and at one time representative in the state legislature, died at the home of his daughter in Parkersburg, April 9, aged 81.

Henry Chenoweth, M.D. University of Louisville Medical Department, 1844, the oldest practitioner in Jefferson County, Ky., died at his home in St. Matthews, near Louisville, April 15, after an illness of only four days, aged 80.

Samuel N. Bemis, M.D. Vermont Medical College, Woodstock, 1848, thrice member of the legislature from Stamford and once from Dummerston, died at his home near Brattleboro, Vt., April 9, from influenza, aged 81.

William Chilton, M.D. Transylvania University Medical Department, Lexington, Ky., 1830, who retired from practice 30 years ago, died at his home in Hempstead, Texas, Dec. 2, 1904, from senile debility, aged 84.

Patrick H. Thornton, M.D. University of Louisville (Ky.) Medical Department, 1857, chief surgeon in the Confederate service during the Civil War, died at his home in Larkspur, Cal., March 24, aged 69.

Worthington William Myers, M.D. University of Maryland School of Medicine, Baltimore, for 12 years a medical inspector of the Philadelphia Board of Health, died in that city, March 11, aged 60.

Benjamin Smith Breczeal, M.D. Medical College of Georgia, Augusta, 1868, died at his home in Hawkinsville, Ga., February 12, from pneumonia, after an illness of one month, aged 72.

George A. Davie, M.D. College of Physicians and Surgeons in the City of New York, 1874, died at his home in Sidney Center, N. Y., from nephritis, after a brief illness, April 6, aged 55.

John W. Bricker, M.D. Detroit Medical College, 1871, at one time mayor of Fostoria, Ohio, died at his home in that city, April 15, from heart disease, after a long illness, aged 77.

Thomas E. Edwards, M.D. Medical Department University of Tennessee, Nashville, 1883, of Memphis, Tenn., died at Union City, Tenn., February 27, after a long illness.

Thomas J. Kennedy, M.D. Medical Department of the University of South Sewanee, Tenn., 1900, died at his home in Haleburg, Ala., early in April, from tuberculosis.

John S. Baker, M.D. Cincinnati, 1854, of St. Joseph, Mo., died in a hospital in that city, April 7, after an illness of a few hours, from cerebral hemorrhage, aged 74.

Presley A. Rosenberger, M.D. St. Louis Medical College, 1859, of Petersburg, Ill., died at the home of his son in El Reno, Okla., from heart disease, April 8, aged 80.

Joseph C. Wilson, M.D. Starling Medical College, Columbus, 1851, postmaster of Edinboro, Pa., from 1886 to 1890, died at his home in that city, March 25, aged 77.

James Milton Nichols, M.D. Missouri Medical College, St. Louis, 1881, died at his home in Milford, Ark., March 18, from pneumonia, after a short illness, aged 71.

Charles V. F. Ludwig, M.D. St. Louis Medical College, 1858, one of the oldest practitioners of St. Louis, died at his home in that city, April 14, from heart disease.

Alexander Kindermann, M.D. Rush Medical College, Chicago, 1883, died at his home in Eugene, Md., April 2, from cancer, after an illness of 10 months, aged 46.

Dumont Fairmount Morenzy, M.D. Philadelphia College of Medicine and Surgery, 1854, died at his home in Boody, Ill., April 7, from heart disease, aged 72.

Abner Crane Williamson, M.D. Ohio, 1879, died suddenly at his office in Champaign, Ill., from cerebral hemorrhage, April 8, aged 65.

William H. Hoskinson, M.D. Miami Medical College, Cincinnati, 1882, died at his home in Trimble, Ill., February 20, aged 50.

John F. Everhart, M.D. Medical Department of the St. Louis University, 1851, died recently at his home in Detroit, Mich., aged 73.

James W. Walker, M.D. Harvard University Medical School, Boston, 1880, died at his home in Los Gatos, Cal., April 5, aged 47.

Frank S. Filkins, M.D. Years of Practice, Illinois, formerly of Barrington, died at Arlington Heights, Ill., February 20, aged 65.

Thomas W. Fullilove, M.D. Bellevue Hospital Medical College, New York City, 1875, died at his home in Boerne, Texas, April 4.

Elizabeth Johnson, M.D. Massachusetts, died at her home in Brockton, Mass., March 2, aged 76.

Jacob G. Sharp, M.D. Pennsylvania, 1875, died at his home in Philadelphia, February 4.

Frederick A. Krill, M.D. Ohio, 1882, died recently at San Luis Obispo, Cal.

Miscellany

CLIPPINGS FROM LAY EXCHANGES.

CASE OF WATER ON THE KIDNEYS.

"Dr. —— died at his home * * * *. The cause of death was aqueous Bright's disease."—*New Bedford* (Mass.) *Standard*, March 9, 1905.

SPIT ONLY ON RED AND YELLOW CARS.

"Dr. ——, of C——, who was arrested for spitting while on a green car, was fined $1.00 and costs in C—— police court Tuesday."—*Cincinnati Post*, Jan. 14, 1905.

HAD A NEW NERVE.

"Mr. —— went to Jamaica for his health, he then being a sufferer with a disease of the frontal nerve in the head." —Stanton, Va., April 3, special dispatch to the *Baltimore Sun*.

INTESTINAL ANOMALY.

"A postmortem * * * * held on the body of Mrs. —— * * * * showed that the large intestine from the stomach to the bowels was closed by a growth."—*Hartford City* (Ind.) *Daily Gazette*, Feb. 20, 1905.

SHE HAD SEVERAL AORTAS.

"Coroner —— had the remains removed to the morgue, where a postmortem will be performed * * * * *. The bullet entered the back and is supposed to have severed one of the lower aortae, causing death by internal hemorrhage." —*Baltimore Sun*, Jan. 18, 1905.

NEW SPECIALTY.

"Dr. —— has already leased an office and has a shingle out, ready for the practice of his new profession. Dr. —— re-recently received a diploma for the practice of spinology * * * * He has no competition in his particular branch of practice."—*Duluth News-Tribune*, Oct. 13, 1904.

MADE A POSTMORTEM STATEMENT.

BUFFALO, Feb. 2.—A special to the *News* from Hornellsville says that Mrs. —— has made a postmortem statement in which she blames Driver Q—— for the grade-crossing disaster. Two mothers and two daughters were among those killed. * * * * The party was given in honor of Mrs. ——, who was 75 years of age."

HE GOT IT IN THE NECK.

"F. W. R—— * * * * had been troubled with a cataract on his left eye * * * * *. When the doctor seen that there were no hope of recovering the use of this eye * * * * Dr. —— performed one of the most skillful operations known to science, that of uniting the optic nerve of the left eye to the nerve of the right eye. The operation was performed in the back of the neck."—*Chandlerville* (Ill.) *Times*.

His Average Fee for Appendicitis.—A distinguished Boston surgeon, who not infrequently receives $1,000 or more for an abdominal or other major surgical operation, recently analyzed his operations for appendicitis from a financial point of view. He found that, taking them all together, he had received an average of $15 apiece for them. This, of course, means that the operations he had done for nothing greatly outnumbered those he had been paid for.—*St. Paul Medical Journal.*

New Journals.—The first number of the *American Journal of Surgery*, the origin of which has been described in THE JOURNAL, has been received and is worthy of commendation as to its shape, style, character of matter, etc. It promises to be a valuable journal for the general surgeon. Dr. Walter M. Brickner is the editor.——*Revista Medica Hispano-Americana* is the name of a new medical journal published in the Spanish language under the editorship of Dr. E. J. Gardiner, Chicago. The character of the contents indicates that the editor intends to make of this a high-class scientific journal. It may seem strange to publish in the center of an English-speaking country a journal in the Spanish language, but when we realize the number of Spanish-speaking countries immediately tributary to the United States, we can readily appreciate the advantage of such a journal. There is a certain amount of jealousy existing between the various small islands and countries south of us which prevents the co-operation of the profession of these various countries in patronizing a first-class journal published in any one of them. Coming from the United States, it is more probable that a journal in the Spanish language will receive the support that it would not otherwise receive. If the character of the journal is kept up to the standard of the initial number it deserves to succeed.——The initial number of *First Aid*, the official journal of the American White Cross First Aid Society, has just been received. Besides containing information in regard to the organization and its objects, with an outline of lectures, etc., it contains articles on the Red Cross Society of Japan, lectures on first aid, especially covering the skeleton, bandaging, etc., and other matters pertaining to health and preventive medicine. It is a creditable journal and speaks well for the enterprise of this new organization. It is published in Chicago.——*Archives of Physiological Therapy* is a new publication from Boston. The title is somewhat misleading, as the contents are almost wholly on the various subjects related to the uses of electricity and radiant energy. Dr. Clarence Edward Skinner is the editor, and his journal has an excellent appearance.——*The Way to Win* is a new journal published in Chicago and edited by Dr. Alfred S. Burdick, of the *Alkaloidal Clinic*. It is devoted to suggestions on success in the practice of medicine. It contains excellent advice on various subjects of interest to the physician.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

WHAT CONSTITUTES DISMISSAL FROM A CASE?

———, ILL., April 5, 1905.

To the Editor:—Dr. A and Dr. B are both very busy general practitioners in a town of between ten and fifteen thousand inhabitants. A is called to see a patient, and, when he reaches there, after due inquiry into the history of the case, he elicits the information that B, who formerly held the case, has not been duly notified. This A demands before he agrees to take the case. The parent of the patient immediately calls B by telephone in the presence of A and simply notifies B that, inasmuch as he had told them that the case was a hopeless one, they had decided to call A. The patient recovered. A later made application for membership in the county society and through the influence of B was rejected on the ground of being unethical in the above case. B claiming that A should not have consented to take the case until he had ascertained if B had been paid in full for services rendered in this case and that A himself should have asked B if he had given up the case. Is A or B right?

ANSWER.—This case should be capable of ready adjustment by the parties involved. On paper, the point at issue seems to be what constitutes dismissal from a case "in due form." One party contends that the method employed was sufficient, and probably most adjudicating bodies would so rule. The other party contends that dismissal "in due form" includes payment of the bill for services of the first attendant, together with direct communication between the last-called physician and the first attendant. It is usual for the dismissed physician to ask payment for his services, and it should certainly be granted by the family, but it seems to us arbitrary and uncalled for to demand that the bill be paid before the family may have any further medical advice. For example, a patient *in extremis* could not, in common humanity, be left without medical attention during negotiations looking to the payment of an abruptly presented bill. The breach of the niceties of the case—if any existed—would on its face seem hardly adequate ground for refusal of membership in the organization.

In any event, we would not pass judgment on the submitted case, because we are not the constituted tribunal and because we have only the facts as viewed by one side. As to what is to be done, the answer is easy. A should appeal to the councilor of the district and ask a proper hearing. Then he should pursue his appeal through the proper constituted authorities until it is clear that he has had a full hearing and a fair verdict on his right to organization fellowship.

COMPOSITION OF SOMNOFORM.

TOWNSEND, MONT., April 7, 1905.

To the Editor:—What is the composition of somnoform? Has it anything to recommend it over nitrous oxid or ether in minor surgery and dentistry? J. P. RITCHEY, M.D.

ANSWER.—Somnoform is a suggestive name given to an anesthetic mixture of ethyl chlorid, 60 parts; methyl chlorid, 35 parts, and ethyl bromid, 5 parts—all by weight. Similar mixtures have been proposed from time to time, notably that of Schleich and anesthol, originated by W. Meyer (THE JOURNAL, Feb. 28, 1903), composed of ethyl chlorid, 17 parts; chloroform, 36 parts, and ether, 48 parts—by weight. The theory regarding anesthesia produced by these mixtures concerns the adjustment of the specific gravities and boiling points by mixing these volatile liquids in certain proportions, and is considered at length in the article referred to.

THE AUTOMOBILE FOR PHYSICIANS.

MUSCODA, WIS., April 17, 1905.

To the Editor:—There has been no information published in THE JOURNAL for over three years concerning the automobile as a vehicle for physicians' use; yet THE JOURNAL of late has become a very popular medium for advertising this machine. Surely some physicians can give their fellow-workers valuable pointers that will be much appreciated by intending purchasers. Which power is best—electricity, steam or gasoline? How many horse power is needed for physicians' use? Is a top desirable? Can a country physician use an automobile successfully? Let us hear from your readers. C. R. PICKERING, M.D.

State Boards of Registration

COMING EXAMINATIONS.

Kansas State Board of Medical Registration and Examination, Kansas City, April 25-26. Secretary, G. F. Johnston, M.D., Lakin.

Board of Medical Examiners for the State of Texas, Austin, May 2. Secretary, M. M. Smith, M.D., Austin.

Indiana State Board of Medical Registration, State House, Indianapolis, May 2-4. Secretary, W. T. Gott, M.D., Crawfordsville.

Louisiana State Board of Medical Examiners, New Orleans, May 4-5. Secretary, Felix A. Larue, M.D., New Orleans.

Mississippi State Board of Health, Jackson, May 9-10. Secretary, J. F. Hunter, M.D., Jackson.

New York State Homeopathic and Eclectic Boards, New York, Albany, Syracuse and Buffalo, May 16-19. Chief of Examinations Division, Charles F. Wheelock, State Capitol, Albany.

Board of Medical Examiners of the State of North Carolina, May 17. Secretary, George W. Pressly, M.D., Charlotte, N. C.

Massachusetts Board of Registration in Medicine, State House, Boston, May 9-10. Secretary, Edwin B. Harvey, M.D., Room 159, State House, Boston.

Connecticut March Report.—Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the written examination held at New Haven, March 14-15, 1905. The number of subjects examined in was 11; number of questions asked, 70; percentage required to pass, 75. The total number of applicants examined was 26, of whom 20 passed and 6 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
College of P. & S., Baltimore	(1904)	79.1
Long Island College Hospital	(1901) 75.3; (1904)	83.7
Harvard University	(1903)	78.4
Yale Medical School	(1903) 84.3, 87.6; (1904) 81.9, 82.1, 86.4, 87.8	
University of Naples	(1901)	79.1
University of Vermont	(1904) 76, 80.8, 81, 81.8	
Maryland Med. Coll.	(1904)	78.2
University of Buffalo	(1900)	76.2
Tufts Medical College	(1903)	76.1
College of P. & S., New York	(1902)	84.4
Johns Hopkins University	(1903)	81.1
FAILED.		
Baltimore Med. College	(1903)	70.4
University of Vermont	(1898)	73.1
College of P. & S., Boston	(1904)	70.7
College of P. & S., Baltimore	(1901)	67.6
Laval University	(1904)	74.1
University of Maryland	(1904)	68.3

Montana April Report.—Dr. William C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, April 4 and 5, 1905. The number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of applicants examined was 23, of whom 14 passed and 9 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
*Hahnemann Medical College, Philadelphia	(1901)	76
Northwestern University	(1904)	75
Rush Medical College	(1903)	75
University of Missouri	(1905)	75
College of P. & S., Chicago	(1903) 82; (1904)	85
College of P. & S., Baltimore	(1903)	81
Harvard Medical School	(1901)	80
University of Edinburgh, Scotland	(1903)	82
University of Virginia	(1897)	84
Cooper Medical College	(1898)	85
University of Michigan	(1902)	80
Jefferson Medical College	(1893)	83
Medical School of Maine	(1901)	79
FAILED.		
University of New York	(1893)	42
Bennett Medical College, Chicago	(1897)	66
Medical College of Virginia	(1904)	66
University of Vermont	(1903)	62
**Rush Medical College	(1900)	..
Hamline University	(1903)	53
Illinois Medical College, Chicago	(1898)	62
University of Minnesota	(1904)	69
Detroit College of Medicine	(1903)	71

*Second examination.
**Withdrew from examination.

North Dakota April Report.—Dr. H. M. Wheeler, secretary of the North Dakota State Examining Board, reports the written examination held at Grand Forks, April 4-6, 1905. The number of subjects examined in was 13, and percentage required to pass, 75. The total number of persons examined was 13, of whom 10 passed and 3 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
University of Minnesota	(1904)	78, 84
University of Illinois	(1903) 75; (1904)	79, 80
Marion Sims-Beaumont Med. Coll.	(1904)	87
Northwestern University	(1904)	77
University of Toronto	(1904)	86
Chicago Homeo. Med. Coll.	(1895)	78
Hamline University	(1903)	83
FAILED.		

Of the three failures, one was an undergraduate, one a graduate of Keokuk Medical College (1903), and one a graduate of Northwestern University (1904).

The Public Service

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending April 15, 1905:

Rockhill, E. P., asst.-surgeon, left Presidio of San Francisco, Cal., on 30 days' sick leave of absence.

Hathaway, L. M., asst.-surgeon, granted two months' leave of absence, to take effect when relieved from duty in Alaska.

Girard, A. C., brigadier-general, retired from active service at his own request, having attained the age of 62 years.

Fowler, J. B., acting asst.-surgeon, department letter of Feb. 13, 1905, granting leave of absence for thirty days revoked.

Ford, Clyde S., and Hartnett, E. H., asst.-surgeons, ordered to report to commanding officer, Artillery District, Potomac, Fort Washington, Md., not later than May 1, 1905, for duty in connection with joint Army and Navy exercises.

Wilson, James S., Greenlauf, Henry S., and Miller, Reuben B., asst.-surgeons, ordered to report to commanding officer, Artillery District of Baltimore, Fort Howard, Md., for duty in connection with joint Army and Navy exercises, not later than May 1, 1905.

Humphreys, H. G., asst.-surgeon, left Washington, D. C., on 30 days' leave of absence.

Manly, C. J., asst.-surgeon, granted 30 days' leave of absence.

Birmingham, H. P., surgeon, relieved from duty as chief surgeon, Department of Texas, and ordered to Fort McPherson, Ga., for duty.

Gray, Wm. W., surgeon, relieved from duty at Fort McPherson, Ga., and ordered to Atlanta, Ga., for duty as chief surgeon, Department of the Gulf.

Straub, Paul F., asst.-surgeon, relieved from duty at Fort Leavenworth, Kan., and ordered to report in person to the Secretary of War for further orders.

Banister, John M., surgeon, on arrival at San Francisco, to proceed to Fort Riley, Kan., for station.

Raymond, H. I., surgeon, on arrival at San Francisco, to proceed to Columbus Barracks, Ohio, for station.

Wickline, Wm. A., asst.-surgeon, left Washington, D. C., on 12 days' leave of absence.

Morris, Edward R., and Carter, Wm. F., surgeons, and Collins, C. C., Hess, Louis T., Eastman, W. R., Rich, Edwin W., Metcalfe, R. F., asst.-surgeons, relieved from duty in the Philippines Division, and ordered to proceed to San Francisco and report to the military secretary for further orders

Lauderdale, Clarence E., dental surgeon, left Fort Ringgold, Texas, and arrived at Fort Bliss, Texas.

Rebert, Michael A., contract surgeon, granted an extension of ten days to his leave of absence.

Probert, Merton A., contract surgeon, left Fort Crook, Neb., on leave of absence.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending April 15, 1905:

Smith, G. T., surgeon, ordered to the *Maryland*.

Lumsden, G. P., surgeon, detached from the *Minneapolis* and ordered to the *Olympia*.

Norton, O. D., surgeon, detached from the *Olympia* and ordered to the *Minneapolis*.

(Orders issued by the Commander-in-Chief of the Asiatic fleet.)

Strine, H. F., asst.-surgeon, detached from the *Helena* and ordered to the *Barry*.

Field, J. G., surgeon, detached from the *Bennington* and ordered to the *Solace*.

Cordeiro, F. J. B., surgeon, detached from the *Solace* and ordered home to wait orders.

Baker, J. W., surgeon, retired, ordered to additional duty in performance of medical attendance of officers of the Navy and Marine Corps in the vicinity of Boston, Mass., not otherwise provided with medical attendance.

Peck, A. E., P. A. surgeon, detached from the *Pensacola* and ordered to the *Bennington*.

Stepp, J., P. A. surgeon, detached from Training Station, Newport, R. I., and ordered to the *Topeka*.

Furlong, F. M., P. A. surgeon ordered to report to the Surgeon General for special duty in the Bureau of Medicine and Surgery, Navy Department.

Ohnesorg, K., P. A. surgeon, detached from the *Topeka* and ordered to the Museum of Hygiene and Medical School, Washington, D. C., for course of instruction.

Cather, D., asst-surgeon, detached from the Naval Hospital, New York, N. Y., and ordered to the Naval Training Station, Newport, R. I., with additional duty on the *Constellation*.

Shipp, E. M., from the Naval Hospital, N. Y., Pryor, J. C., from the Naval Hospital, Narragansett Bay, R. I., surgeons, L. W. Bishop from the *Southery*, J. H. Iden detached from the Naval Hospital, Narragansett Bay, R. I., F. L. Benton from the Naval Recruiting Station, Philadelphia, Pa., Shiffert, H. C., from the U. S. R. S. *Franklin*, Murphy, J. A., from the Navy Yard, Washington, D. C., P. A. surgeons, Farwell, W. G., medical director, retired, ordered to the Naval Recruiting Station, Philadelphia, Pa., April 26.

Leys, J. F., P. A. surgeon, ordered to Washington, D. C., April 28, for course of instruction at the Naval Museum of Hygiene and Medical School.

Fiske, C. N., P. A. surgeon, detached from the Naval Hospital, Boston, Mass., April 26, and ordered to Washington, D. C., April 28, for course of instruction at the Naval Museum of Hygiene and Medical School.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending April 12, 1905:

Mead, F. W., surgeon, granted leave of absence for six days from April 24.

Cumming, H. S., P. A. surgeon, granted leave of absence for ten days from April 15.

Fricks, L. D., P. A. surgeon, granted three days' leave of absence from April 3, 1905, under Paragraph 191 of the Regulations.

Earle, B. H., asst.-surgeon, to proceed to certain points in Oregon for special temporary duty.

Stimson, A. M., asst.-surgeon, relieved from duty in the Hygienic Laboratory, and directed to proceed to Ellis Island, N. Y., and report to Surgeon G. W. Stoner for duty.

Wightman, W. M., asst.-surgeon, granted leave of absence for three days from March 18, 1905, under Paragraph 191 of the Regulations.

Mullan, E. H., asst.-surgeon, relieved from duty at New York (Stapleton), N. Y., and directed to proceed to Ellis Island, N. Y., and report to Surgeon G. W. Stoner for duty.

Drew, A. D., acting asst.-surgeon, granted leave of absence for two days, March 8 and March 24, 1905, under Paragraph 210 of the Regulations.

Stafford, M. V., acting asst.-surgeon, to proceed to Portland, Maine, for special temporary duty.

McKay, M., pharmacist, to report to chairman of board for physical examination to determine his fitness for promotion to the grade of pharmacist of the first class.

Watters, M. H., pharmacist, granted leave of absence for fifteen days from April 12.

PROMOTIONS.

Asst.-Surgeon T. D. Berry commissioned (recess) as P. A. surgeon, to rank as such from March 24.

Asst.-Surgeon A. J. McLaughlin commissioned (recess) as P. A. surgeon, to rank as such from April 10.

APPOINTMENT.

Dr. Mary A. Israel appointed medical inspector for duty at Manila, P. I.

BOARDS CONVENED.

Board to meet at Washington, D. C., April 10, 1905, for the physical examination of an officer of the Revenue Cutter Service. Detail for the board: Assistant Surgeon-General W. J. Pettus, chairman; Assistant Surgeon H. McG. Robertson, recorder.

Board to meet at Boston, April 12, 1905, for the physical examination of Pharmacist M. McKay to determine his fitness for promotion to the grade of pharmacist of the first class. Detail for the board: Surgeon R. H. Woodward, chairman; Assistant Surgeon W. C. Rucker; Acting Assistant Surgeon F. H. Cleaves, recorder.

Board to meet at Washington, D. C., April 17, 1905, for the physical examination of officers of the Revenue Cutter Service. Detail for the board: Assistant Surgeon-General W. J. Pettus, chairman; Assistant Surgeon H. McG. Robertson, recorder.

Board to meet at San Francisco April 20, 1905, for the physical examination of an officer of the Revenue Cutter Service. Detail for the board: P. A. Surgeon W. G. Stimpson, chairman; P. A. Surgeon J. M. Holt, recorder.

Board to meet at San Juan, Porto Rico, April 24, 1905, for the physical examination of an officer of the Revenue Cutter Service. Detail for the board: P. A. Surgeon W. W. King, chairman; Acting Assistant Surgeon P. V. Atiles, recorder.

Board to meet at Port Townsend, Wash., April 24, 1905, for the physical examination of officers of the Revenue Cutter Service. Detail for the board: P. A. Surgeon J. H. Oakley, chairman; P. A. Surgeon, D. E. Robinson, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine Hospital Service, during the week ended April 14, 1905:

SMALLPOX—UNITED STATES.

Florida: Jacksonville, April 1-8, 7 cases.
Illinois: Cairo, April 3, 5 cases; Danville, April 1-8, 3 cases.
Louisiana: New Orleans, April 1-8, 26 cases, 1 death, March 1-31, Pointe Coupee Parish, several cases; St. James Parish, several cases; St. John Parish, 1 case.
Michigan: Grand Rapids, April 1-8, 2 cases, 1 death; at 47 localities, March 18-25, present.
Mississippi: Natchez, March 25-April 8, 2 cases.
Missouri: St. Louis, April 1-8, 28 cases, 8 deaths.
Nebraska: April 1-8, Omaha, 1 case; South Omaha, 1 case.
New York: New York, April 1-8, 4 cases.
North Carolina: April 3, Goose Creek Island, 50 cases; Hog Island, 15 cases.
Ohio: Cincinnati, March 31-April 7, 6 cases.
South Carolina: Charleston, April 1-8, 2 cases.
Tennessee: Memphis, April 1-8, 7 cases.

SMALLPOX—FOREIGN.

Africa: Sierre Leone, March 10-17, 240 cases.
Brazil: Bahia, Feb. 25-March 11, 24 cases, 1 death; Escadia, March 11, epidemic; Rio de Janeiro, March 12-19, 8 cases, 4 deaths.
Ecuador: Guayaquil, March 7-14, 4 deaths.
France: Paris, March 18-25, 29 cases, 5 deaths; St. Etienne, March 1-15, 2 cases.
Germany: Bremen, March 18-25, 1 case.
Great Britain: Cardiff, March 25-April 1, 1 case; Hull, March 18-25, 2 cases; Leeds, March 25-April 1, 12 cases; March 18-25, London, 3 cases; Nottingham, 1 case.
India: Bombay, March 7-14, 172 deaths; Calcutta, March 4-11, 10 deaths; Karachi, Feb. 5-12, 18 cases, 2 deaths; Madras, March 4-10, 6 deaths.
Italy: Catania, March 23-30, 1 death; Lecce, March 8-16, 6 cases; Palermo, March 18-25, 13 cases, 4 deaths.
Mexico: City of Mexico, March 25-April 1, 2 cases, 2 deaths.
Russia: March 18-25, Moscow, 7 cases, 3 deaths; Odessa, 4 cases, 2 deaths; St. Petersburg, Feb. 11-March 18, 41 cases, 12 deaths; Warsaw, Jan. 21-28, 1 death.
Turkey: Smyrna, Dec. 25-Jan. 1, 1 death; Smyrna, Feb. 12-19, 1 death.

YELLOW FEVER.

Brazil: Rio de Janeiro, March 12-19, 8 cases, 3 deaths.
Mexico: Coatzacoalcos, March 26-April 1, 1 case, 1 death.
Panama: Jan. 1-March 27, 43 cases, 18 deaths.

CHOLERA.

India: Calcutta, March 4-11, 32 deaths.
Russia: Baku Government, Feb. 17-24, 1 death; Don Territory, Feb. 5-17, 7 cases, 3 deaths.

PLAGUE.

Africa (Britsh): Durban, Jan. 29-Feb. 11, 4 cases, 4 deaths.
Arabia: Aden, March 10-17, 60 cases, 55 deaths.
Brazil: Rio de Janeiro, March 12-19, 2 cases.
Chile: Copiano, March 10, present; Coquimbo, March 14, present; Pisaqua, March 10, epidemic.
Egypt: Tukh, March 4-11, 1 case; Bombay, March 7-14, 683 deaths; Calcutta, March 4-11, 315 deaths; Karachi, Feb. 5-12, 77 cases, 71 deaths.
Peru: Cajamarca, March 10, present.

Society Proceedings

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Portland, Ore, July 11-14, 1905.

American Gastro-Enterological Assn., New York, April 24-25.
Medical and Chirurg. Faculty of Maryland, Baltimore, Apr. 25-27.
Texas State Medical Association, Houston, April 25-28.
Nebraska State Medical Association, Beatrice, May 2-4.
American Proctological Society, Pittsburg, May 5-6.
American Therapeutic Society, Philadelphia, May 4-6.
Utah State Medical Association, Salt Lake, May 9-10.
Medical Society of Nevada, Reno, May 9-10.
Louisiana State Medical Society, New Orleans, May 9-11.
New Mexico Medical Society, Las Vegas, May 10.
Ohio State Medical Association, Columbus, May 10-12.
American Ophthalmological Society, Boston, May 11-12.
American Association of Physicians, Washington, May 16-17.
Arkansas Medical Society, Little Rock, May 16-17.
Illinois State Medical Society, Rock Island, May 16-18.
Iowa State Medical Society, Des Moines, May 17-19.
New Hampshire Medical Society, Concord, May 18-19.
Missouri State Medical Assn., Excelsior Springs, May 17-18.
Montana State Medical Association, Butte, May 17-18.

CONFERENCE OF AMERICAN ANATOMISTS.

Held in Philadelphia, April 11-12, 1905.

(Concluded from page 1207.)

This conference was marked by harmony and enthusiasm. It is expected that the Wistar Institute will become a clearing house for anatomy in America. The result promises to show that the conference was one of the most important steps ever taken in the development of American anatomy.

Dr. Chas. S. Minot of Harvard University was elected chairman and Dr. M. J. Greenman secretary.

The Outlines of Work Proposed.

A general discussion resulted in an unanimous opinion that the Wistar Institute of Anatomy offered unusual facilities

for defining American anatomy. It was thought that research material might be collected and prepared there, especially material for neurologic and embryologic research; that original preparations, which had been studied and which are, therefore, of much greater value, should be deposited in the Wistar Institute Museum for future use of students who wish to review the work. Dr. Geo. S. Huntington spoke of the importance of organized efforts to collect and properly to prepare a vast amount of anatomic material which goes to waste and which should, instead, be used while fresh. Dr. Barker urged that the Institute could act as a trust company for all institutes and thus in it research material might be kept for reference and special collections received. Professor Gage suggested the photographing of valuable type embryo sections, which could be sent about instead of the originals.

Many of those present laid special stress on the importance of research. Dr. McMurrich said that the museum could not be separated from research, and mentioned the Hunterian Museum as an example. Dr. Piersol urged the immediate establishment of research work and the development of museum series of comparative anatomy. Dr. Conklin thought that the institute should develop a high degree of technical skill. Dr. Donaldson recommended the establishment of particular lines of research as a prerequisite for the collection of material and the development of a museum, and Dr. Mall advised that the institute should have a number of researchers in its own laboratories.

The Plan of Work Adopted.

As a result of this trend of thought the committee, Drs. Minot, Donaldson and Mall, appointed to form a plan of work, reported on the second day as follows:

1. The principal object of the Wistar Institute to be research and under these headings:
(*a*) A chair of investigation. (*b*) Research assistants or assistantships and men who shall divide their time between the museum proper and research. (*c*) Technical assistants.
2. Research and Materials: Researches shall be in the field of neurology, comparative anatomy and embryology.
3. Relations: Committee recommends (*a*) that the subvention to the *Journal of Anatomy* be granted. (*b*) That a committee be appointed to consider relations of the Wistar Institute to American anatomists. (*c*) That the Wistar Institute apply to the Association of American Anatomists for co-operation.
4. An advisory board of ten should be apointed for general purposes: (*a*) To form a committee on neurology as well as other committees which may be needed. (*b*) To establish relations with the committee of the International Association of Academies for Brain Investigation and with other committees for collective investigation.
While the general trend of work above outlined is recommended, there is no intention to advise limitation of the functions of the institute to it exclusively.

Election of Officers.

The report was accepted and the advisory board appointed. Dr. C. S. Minot was chosen chairman and Dr. M. J. Greenman permanent secretary. The advisory board appointed the following subcommittees: Neurology, Drs. Mall, Minot, McMurrich, Donaldson and Barker; relations of the institute to anatomists, Drs. Gage, Piersol and Huber; development of the institute in comparative anatomy and embryology, Drs. Mall, Conklin and Huntington.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Fifteenth Annual Meeting, held at Chicago, April 10, 1905.

(*Concluded from page 1218.*)

Uniformity of Curricula.

The committee on uniformity of curricula, George M. Kober, W. J. Means and Parks Ritchie, recommended as a standard curriculum to be adopted as a minimum for the degree of M.D., the following: 1. The course shall consist of four terms in four separate calendar years. 2. Each term shall consist of at least thirty weeks of work, exclusive of holidays and of not less than thirty hours of college work in each week. 3. The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in table herewith, and no college shall be recognized that falls below this standard over 20 per cent. in any one branch, or over 10 per cent. in the total.

STANDARD CURRICULUM.

	Number of Hours of Lectures in Entire Course.	Number of Hours of Laboratory.	Number of Hours of Clinics.	Total.
1. Histology	30	60	.....	90
2. Embryology	30	60	.....	90
3. Osteology	30	.....	.....	30
4. Anatomy	190	230	.....	420
5. Physiology	180	120	.....	300
6. Chemistry and Toxicology	100	200	.....	300
7. Materia Medica	40	20	.....	60
8. Pharmacology	40	20	.....	60
9. Therapeutics	90	.....	.....	90
10. Bacteriology	40	100	.....	140
11. Pathology	100	140	.....	240
12. Medical Zoology, Postmortem work and Clinical Microscopy	30	60	.....	90
13. Physical Diagnosis	20	.....	80	100
14. Practice of Medicine	180	.....	360	540
15. Surgery	180	.....	360	540
16. Obstetrics	100	.....	60	160
17. Gynecology	50	.....	110	160
18. Pediatrics	40	.....	60	100
19. Eye and Ear	30	.....	30	60
20. Nose and Throat	30	.....	30	60
21. Mental and Nervous Diseases	60	.....	60	120
22. Electro-Therapeutics	20	.....	40	60
23. Genito-Urinary Diseases	30	.....	30	60
24. Dermatology and Syphilis	20	.....	20	40
25. Hygiene and Public Health	30	.....	.....	30
26. Dietetics	30	.....	.....	30
27. Medical Jurisprudence	30	.....	.....	30
	1750	1010	1240	4000

The report was adopted, as amended, namely, that colleges be permitted to substitute laboratory and clinic hours for didactic hours.

Discussion on Preliminary Education.

PROF. J. H. T. MAIN, dean of the faculty of Grinnell College, Iowa, discussed the question of the combined course, so far as it embraces the teaching by liberal arts colleges of subjects which are fundamental to medicine. He said the condition is the result, not of any design on the part of colleges of liberal arts, but of a natural and inevitable evolution due to the enormous enlargement of the field of knowledge which has taken place within the last fifteen or twenty years. The colleges which ten years ago offered fifty courses are now offering as many as 200 courses. This has been brought about by the so-called elective system, which makes it necessary for a man to choose his work, and to enlarge on it in order to have the required number of hours. Naturally, he will keep in mind what he is going to do in life, and choose his subjects accordingly. This is necessary, because if the student does not do this, he is likely to be required to spend eight years at college, including the course in the medical college.

The time has come for a mutual understanding and agreement between the colleges of liberal arts and the medical colleges. The university has recognized this in its own territory and has provided for the combined course. The medical college has also recognized it in its own territory, and has conceded that it is a good thing for a man to shorten his course, if he can do so. There is a debatable ground between the college on the one hand, and the medical college on the other, that is, the independent college that has no medical school in connection with it. There is danger that the independent college will be forced out of existence between these two contending forces. Something must be done to equalize conditions. Many courses are offered in colleges of liberal arts of direct bearing on medical education. The medical school requires these and teaches them. The colleges teach them, not because the medical school requires them, but because they are subjects in pure science and the college has a right to give them as a part of the liberal training. The man who takes these courses is entitled to consideration, not credit, but consideration; and the college in which he takes these courses is also entitled to consideration, no more or less. Can the college teach these subjects in such a way that they are entitled to consideration by the medical school? A number of universities are demonstrating the fact that it can be done. They are teaching these subjects with distinct reference to medicine, giving them in their department of liberal arts. It is the business of the

medical school to regulate a condition that already exists so that it will not be injurious to the medical school or unjust to the college of liberal arts. This question should be made an educational question. There is no reason why the independent college should be excluded from the medical school or why it should be forced to stop teaching these pure sciences. The whole question rests on the quality of the work done. If the college gives a course in histology, or physiology or chemistry, or any other of the pure sciences fundamental to medicine that is worth credit, it should receive that credit. Let the medical school pass on the quality of the work. If it is not fit to be recognized, tell the college where it is short, and the work will be brought up to the standard.

The colleges do not ask for a flat credit for the A. B. degree at the present time. They merely ask that credit be given for this work. The value of the work can be determined by inspection. This association is competent to appoint a commission for the purpose of inspecting every state university and all colleges of repute for the purpose of determining whether colleges offering these courses are offering them in a way entitling the student to consideration in the medical college. That board might be composed of men in the medical college, or it might include men from colleges of liberal arts for the purpose of advice. That board might also formulate courses that could be offered in colleges of liberal arts and define definitely what should be the standard and the character of the teaching. No profession requires and demands as much liberal culture and careful technical training as does the medical profession, and it is worth while giving some consideration and some encouragement to the college that is anxious that the men coming to it should receive that training. It is a great injustice to the college of liberal arts that their graduates must enter the medical college on the same conditions as do the graduates of the high school.

DR. GEORGE W. WEBSTER, Chicago, said that the matter of preliminary entrance requirements is one that has been neglected more than any other. In many medical colleges to-day the entrance requirements are not as high as they were for the first medical college organized in the United States, that is, in proportion to the conditions existing. He agreed with Professor Main that men who have taken certain work in the university should be given credit for such work by the medical college, so far as it applies on the work of the first year of the medical course. It is not necessary to have the first two years of the medical course taught in great centers of population, but until a college teaches these preparatory studies, and gives a course both in time and quality that is equivalent to the work as given at present in the best medical colleges, credit should not be allowed.

PROF. S. D. WILLISTON said that there must be co-relation between the subjects of pure science started in the college or university and the same subjects in the medical school. The medical profession should recognize such work. Students preparing themselves for the study of medicine should not be allowed to spend four years in desultory studies, but should be directed to the study of the pure sciences. The university has laboratories that are well equipped, and teachers who are competent to teach these pure sciences. It remains for the medical profession to say whether they will take advantage of these opportunities, and to say whether the student who has taken this work must take it again in the medical school. The medical profession will encourage advanced preparation by giving recognition to those colleges that teach these subjects and teach them well. This Association of Medical Colleges should occupy precisely the same position with reference to recognizing this work that university trustees occupy in recognizing the work of the high school. It is the duty of the association to examine the work done in liberal arts colleges, to lay down the requirements these colleges must meet, and when they do meet them, recommend that credit be given by the medical college for such work.

PROF. A. W. SMALL, Chicago, said that the universities are desirous of working with medical colleges, recognizing the exact value of things as they are. If the course in histology given in the college or university, where work is done on a thoroughly scientific basis, is well done, it is worth precisely as much and more under certain circumstances, as a part of medical education, as the same work done in the medical school. Students taking this work should be given credit for just what it is worth. If the work done in the college is the equivalent of the work done in the medical school, why should the student be asked to do it all over again? On the part of educators in general, two things are desirable; first, that the educational courses shall be arranged in such a way that there will be no artificial barriers for individuals going on as fast as possible in their chosen profession. Second, to induce persons to broaden the foundations of professional preparation by taking the pure sciences in the colleges where the equipment is ample and the work taught on a scientific basis.

TENNESSEE STATE MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Nashville, April 11-13, 1905.

The President, DR. PAUL F. EVE, Nashville, in the Chair.

The association met in Watkins Hall. To the addresses of welcome by Mayor A. S. Williams and Dr. George H. Price, response was made by Dr. H. Berlin, Chattanooga.

Officers.

The following officers were elected for the ensuing year: President, Dr. Cooper Holtzclaw, Chattanooga; vice-presidents, Drs. S. W. Woodyard, Greeneville; Alfred Moore, Memphis, and A. F. Richards, Sparta; secretary, Dr. George H. Price, Nashville; treasurer, Dr. W. C. Bilbro, Murfreesboro; delegates to American Medical Association, Drs. W. J. Miller, Johnson City, and W. D. Haggard, Nashville; *alternates*, Drs. G. O. Bicknell, Madisonville, and Louis LeRoy, Nashville.

Memphis was selected as the place for holding the next annual meeting, April 10-12, 1906.

Food Adulteration in Tennessee.

MR. LUCIUS BROWN, Chemist, Nashville, in a paper on this subject, said that milk is peculiarly liable to sophistication on account of its perishable nature and the readiness with which it can be adulterated. This takes the form of watering, thereby reducing the quality, and the addition of preservatives to conceal or prevent decay. There is no form of food adulteration which is more despicable than this. Milk is the standard food of young children, and is largely used for invalids, and the addition to it of such materials which have a directly injurious effect on the digestion, and usually only takes down the danger signal without removing the danger, should be relentlessly and severely punished. An examination of pure-food legislation shows that twenty-two states have a regularly organized food-inspection department. It is significant that Kentucky has just increased its appropriation for this purpose from $7,500 to $10,500. For the proper enforcement of pure-food laws a qualified analytical chemist is an absolute necessity. Not less necessary is a wise and active pure-food commissioner. There need be, on the part of the retailer, no fear of a hardship being worked on him by a proper enforcement of food legislation. He is always given an opportunity to put himself right, if he desires to do so, under any food laws. But in order to reassure him, most states allow the retailer to be exempt from conviction if he produces a written guarantee from the wholesaler or his agent resident in the state.

Early Diagnosis and Early Treatment of Otitis Media.

DR. N. C. STEELE, Chattanooga, said that a large number of adults are permanently deaf in one or both ears. Of every one thousand seriously deaf ears, perhaps in 999 the disease is otitis media, and every aurist knows that chronic otitis media is generally incurable. He pointed out the general management and treatment and closed by saying that the physician who looks carefully and intelligently after the patient's general health, as well as the local treatment, will have the greatest success in otitis media, just as he would in other local diseases.

Tuberculosis Cutis.

DR. J. M. KING, Nashville, pointed out how the initial skin lesion is formed, and spoke of the differentiation of lupus from rosacea, eczema, and blastomycosis. Radiotherapy, Finsen light and violet rays are at present considered the most acceptable methods of treatment, and should always be used if the patient is within reach of it. The *x*-ray and Finsen light are both satisfactory, but the ideal instrument is the combined use of *x*-rays and Finsen light.

Medical Ethics.

DR. T. J. HAPPEL, Trenton, regretted that most graduates leave medical colleges with a vague sort of idea that there used to be in the dim past a set of rules governing the relations of medical men to one another, to their patients, and to the public at large, but that because nothing has ever been said to them by their professors on this subject those rules have long since passed into innocuous desuetude. In many instances they soon become imbued with the idea set forth by a certain lecturer of the importance of "getting there," and that they lay down for their own guidance "get there" in any way one can, provided he does not violate the eleventh commandment. They follow their own golden rule as written and interpreted in these days of greed for gain—Do unto the other fellow as you would expect him to do unto you if he can, and do it first.

Origin and Treatment of Malignant Growths.

DR. PAUL F. EVE, Nashville, selected this as the title of the president's address. He mentioned two varieties, one of the epithelial type of cells known as carcinoma; the other of the endothelial variety, or connective tissue cells, known as sarcoma. Both of these in many respects present clinical features very much alike. He referred to the theory that cancer is due to parasitic origin, but said he is very much more favorably impressed by the other theory which bases the origin of cancers on cell proliferation. Assuming that this disease is due to cell proliferation, if one can in any way check or change these cells, he has the promise of an ultimate success and recovery.

About two years ago he operated on a woman for scirrhous mamma, with involvement of the neighboring glands. A very complete operation was made, and every vestige of the disease removed, so far as could be discovered. Her recovery seemed complete in every respect, and he flattered himself that there would be no recurrence. Four months after the operation the woman returned with a reappearance of the disease in the scar tissue. A second operation was performed, which consisted of curetting the diseased structures. The patient was subjected to treatment with the *x*-ray for four weeks. At first improvement was noticed, but at the end of the third week the wound looked very unhealthy, and at the end of another week the patient returned to him, appealing for some means to save her life. The appearance of the ulcer was foul and fungous, and every indication pointed to general infection and a speedy death. He began to treat this wound with balsam of Peru, after first irrigating with bichlorid of mercury, 1-3,000. After the first few days the unpleasant odor ceased, and he was surprised to notice a decided change and granulations of a healing nature springing up in the wound. This treatment continued for five weeks, with an occasional touching up of the granulations with the solid stick of nitrate of silver. At the end of this time the wound was entirely healed, and the patient looked the picture of health. He had the pleasure of seeing this patient a short time ago. There was not the slightest evidence of any recurrence, and the woman was in excellent health.

Since this case he has had quite a number of other cases which have been treated in a similar manner. Improvement has been marked in every instance, and the ulcerations from the foul and fungous condition have assumed healthy granulations, healing occurring slowly but effectually. He cited two more cases.

(To be continued.)

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held March 22, 1905.

The President, DR. JAMES M. ANDERS, in the Chair.

SYMPOSIUM ON PNEUMONIA.

The Health of the City.

DR. THOMAS DARLINGTON, commissioner of health of New York City, spoke of the pneumonia commission, saying that it would conduct its investigation along two main lines—clinical and bacteriological—and that information is especially desired on the following points: 1. The occurrence and virulence of the pneumococcus and organisms related to or resembling it, in the human mouth in health and disease. 2. The evidence and the extent of variations in virulence of the pneumococcus under different conditions. 3. The occurrence of the pneumococcus in children's hospitals, homes and asylums, and the bacteriology of the mouth before and after outbreaks of pneumonia. 4. The vitality of the pneumococcus under various conditions. 5. The value of mouth disinfection. 6. The bacteriology of the air of public places, conveyances and buildings, and private dwellings, especially in reference to its dust content. The public buildings to embrace stores, factories, large office buildings, public schools, theaters, hospitals, tenements and private houses. 7. The clinical evidence of the communicability of pneumonia as shown by the collection of cases in private houses and public institutions. 8. The seasonal relations of pneumonia. 9. The collection of statistics of pneumonia of the different varieties occurring in hospitals, special attention being paid to terminal pneumonia. 10. The collection of evidence as to the proportion of cases in which pneumonia can be regarded as an autoinfection, and the proportion of cases in which there is evidence of the communicability of the infectious agent. 11. The study of sporadic cases of pneumonia, special attention being given to relationships of the individual to crowds or to exposure to other cases of pneumonia, and the determination of the presence of the pneumococcus in the mouth in those cases and cases associated with them. 12. The evidence for the belief that pneumonia is infrequent in Arctic regions. 13. A statistical study of pneumonia, covering its prevalence in different latitudes and in different countries and cities, its yearly and seasonal variations and its types and mortality.

Symptomatology and Diagnosis of Atypical Forms of Pneumonia.

DR. J. C. WILSON pointed out that the application of the term pneumonia to two conditions clinically and pathologically essentially different, namely, bronchopneumonia and croupous pneumonia, has been the cause of misleading therapeutic conclusions, and has rendered many of the statistical data relating to the prevalence and death rate of croupous pneumonia absolutely worthless. Acute pneumonic phthisis, syphilitic pneumonia, inhalation or deglutition pneumonia, postoperative and anesthesia pneumonias, hyperstatic pneumonias and influenzal pneumonias, as well as the pneumonias of measles and pertussis, are not to be regarded as atypical forms of pneumonia, but are properly to be classed with bronchopneumonias. When the above cases are referred to their proper nosological position, there remains to be considered the great group of cases of croupous pneumonia. Dr. Wilson regards it as difficult to draw a sharp line between the typical and the atypical cases. It is generally agreed that the cases occurring in infancy, in old age and in drunkards are atypical, yet physicians have many times seen typical cases under these conditions. Nevertheless, the following forms are generally regarded as differing sufficiently widely from the type to deserve separate and special consideration: 1. Pneumonia in infants. 2. Pneumonia in the aged. 3. Pneumonia in the alcoholic—pneumonia potatorum. 4. Toxic, so-called typhoid pneumonia. 5. Epidemic pneumonia. 6. Larval pneumonia.

From the standpoint of the pulmonary lesion the following atypical forms are to be considered: 1. Upper lobe pneumonia, so-called apex pneumonia. 2. Pneumonia migrans. 3.

Central pneumonia. 4. Terminal pneumonia. 5. Pneumonia in pulmonary emphysema. 6. Hemorrhagic pneumonia.

The diagnosis of typical cases of croupous pneumonia is unattended with difficulty, errors arising much more frequently from carelessness than from ignorance. Too much importance, he believes, can not be attached to a systematic routine examination of the chest in all cases of acute disease beginning abruptly with chill followed by fever, or presenting pulmonary symptoms. The diagnosis becomes difficult in proportion as the departure from type becomes more marked. In the extreme forms of atypical pneumonia—the terminal pneumonias—the clinical diagnosis is very often impracticable. Herpes, which occurs in more than half the cases, is of diagnostic importance. The detection of the pneumococcus reinforces the clinical diagnosis. It can only rarely be utilized in diagnosis, except to this extent. Leucocytosis is an almost constant phenomenon. Its diagnostic importance is diminished by the fact that it also occurs in most of the conditions in which the question of differential diagnosis arises. Leucopenia is of most unfavorable prognostic significance.

Medical Treatment of Pneumonia.

DR. H. A. HARE agreed with Dr. Wilson that the statistics as to the mortality and as to the results of treatment in pneumonia are practically valueless, because different types of this disease are considered under the one heading of pneumonia, when in reality only the most careful differentiation of different types can give reliable statistics. Again, he says, much depends on the age of the patient and the time at which treatment is instituted. He advocated the use of moderate doses of digitalis and belladonna for a failing circulation and advised a more moderate employment of strychnin and the rare employment of nitroglycerin, except when definitely indicated. The subject of venesection, hypodermoclysis and intravenous injection was also considered.

Etiology and Pathology of Pneumonia.

DR. WARFIELD T. LONGCOPE said that in spite of the extensive investigations on the pathogenesis of lobar pneumonia, bacteriologists and pathologists have added little which aids in the diagnosis, treatment or prevention of the disease. Until recently observers have not been able to produce lobar pneumonia experimentally in animals, but within the last year, Wadsworth has succeeded in producing the typical disease in rabbits by intratracheal injections of virulent pneumococci into animals which had previously been partially immunized. It is now generally conceded that in the vast majority of pneumonia, if not all, that pneumococci gain entrance into the circulating blood and set up a general infection. Tizzoni and Pacuchi have recently shown that pneumococci may circulate in the blood of immunized rabbits for weeks or months without perceptible harm to the animals. Resolution has been shown by Flexner to occur through autolysis of the exudate. Antipneumococcic serum, according to Rimpau and Neufeld, contains a substance which prepares pneumococci for phagocytosis.

Surgical Complications of Pneumonia.

DR. JOHN H. GIBBON said that of the surgical complications of pneumonia, empyema is the most common, and that the success of the surgical treatment depends largely on early recognition. Confirmation of diagnosis is made by the exploring needle, which procedure should be carried out with as much care as any surgical opening of a clean healthy cavity. When pus is present, the procedure must be followed by thorough drainage. Dr. Gibbon uses chlorid of ethyl as an anesthetic, either alone, or as a precursor of ether. In practically every instance beyond the age of twenty, he would do a subperiosteal resection of the rib rather than simple drainage. Masses of lymph are removed by the fingers. There should be two drainage tubes as large as the finger, and they should be stitched in. The whole keynote of the treatment of empyema is the early and thorough evacuation of the pus, with the opening made as low down in the pleural cavity as possible. Another condition which is very common is lung abscess, due to foreign bodies lodged in the bronchi, to tuberculosis, or to pneumonia. Of the three varieties, that due to pneumonia gives the best results from surgical treatment. The diagnosis is attended with more difficulty than that of empyema. Drainage should be carried out exactly as in empyema. In the presence of adhesions between the lung and the chest wall either of two courses may be followed: The protection of the healthy pleural cavity by gauze packs and immediate drainage of the abscess; or the stitching of the lung to the parietal pleura, allowing the formation of adhesions before drainage.

DISCUSSION.

DR. JOHN H. MUSSER called attention, first, to the cases simulating abdominal conditions. In deciding whether the condition is one of inflammation in the upper abdomen or an infection above the diaphragm, attention to a few of the classical phenomena attendant on each condition aid in diagnosis. Of the greater importance are the phenomena attendant on supra-diaphragmatic cases. Here the rusty expectoration or the expiratory grunt are the most valuable signs of pneumococcic infection of the lung; or, the pulse and respiration ratio. Examination of the blood does not aid, because in both conditions there is leucocytosis. In differentiating between pneumonia and meningitis, the presence or absence of the phenomena which attend meningitis is more helpful than pneumonic symptoms. The slow pulse and the rather slow respiration are indicative of meningeal trouble. In other instances violent hemorrhage at the onset of the disease suggests tuberculosis. The course of the disease offers more help than do the specific symptoms or laboratory signs. In still other instances delirium is so marked in the period of convalescence as to make the case atypical. This delirium, both in hospital and private patients, comes on immediately after the crisis and rages violently for from three to five days or two weeks, unattended by fever or undue change in pulse rate. The patients recover without any unusual cerebral complications. In no instances has he seen empyema follow as a complication. In one case there was abscess of the lung. It should be remembered that empyema does not always loculate at the base, the infection often being between the lobes. Dr. Musser thinks it a mistake to regard pneumococcic infection as a self-limiting disease. No one can tell how quickly the simplest case may become gravely toxic.

DR. JOHN B. ROBERTS said that the surgeon comes in contact with traumatic pneumonia, ether pneumonia, pneumonia due to cold from insufficient clothing (no-undershirt pneumonia) in patients in hospitals, croupous pneumonia, influenza pneumonia and septic pneumonia. It is often difficult to determine whether a given case is one of true croupous pneumonia or influenza pneumonia. He stated that in the incipient stage of inflammation of the lungs, prompt and efficient dry cupping should be used. He puts on half a dozen large tumblers, using small pieces of paper dipped in alcohol, to make the vacuum in the glasses. These are left on for half an hour or more, and are followed usually by turpentine stupes. In sthenic cases of pneumonia, and particularly in pneumonia following gunshot or stab wounds of the lung, or injury of the lung from fractured ribs, venesection is often of great value. He is confident that he has prevented congestion of the lung from becoming a pneumonia by efficient dry cupping; and that he has also prevented disastrous results from acute pneumonia following injuries of the lung by phlebotomy. In cases with a great deal of mucus in the bronchial tubes, he has seen life apparently saved by inverting the patient in order that gravity might act as a mechanical expectorant. The serous effusion in the pleura, which occurs as a complication of pneumonia, should be treated by prompt tapping. This may be done as well by the ordinary hydrocele trocar properly sterilized as with the complicated apparatus known as an aspirator. In empyema it is necessary promptly to evacuate the pus and lymph masses. This is easily done by putting the patient in the semi-recumbent posture, freezing the skin with ice and salt, and making a 2½-inch incision with a straight bistoury. It is never necessary to resect the rib in order to get room for evacuation and drainage; and it is better not to take the time for resection

of the rib, when the patient is in a serious condition for which operation is done. If it is found, after a lapse of some weeks, that the lung does not expand and the chest wall does not sink in to close the cavity, resection may be done with much greater safety to the patient than at the time of the original incision. Many cases will never need the rib resected; and even in young children, not over a year old, it is easy to get a finger between the ribs and to insert a drainage tube. The incision should be made with a quick thrust of the knife, just as one would open an abscess elsewhere. The wound should then be expanded with two fingers to allow the pus to flow and the masses of lymph to escape. The latter may need to be hooked out with the finger tip. Two rubber drainage tubes placed side by side should be inserted and stitched to the skin to keep them from falling out of the wound; and each should have a safety pin in the outer end to avoid their being sucked into the chest, if the suture threads should cut through the skin unobserved by the physician. Abscess of the lung should be treated in a similar way by free incision and boring between the ribs with the finger to evacuate the pus. No resection of the rib is needed here. Irrigation is not needed in cases of empyema, unless the temperature should subsequently show that the cavity has become septic from putrefactive germs. Then it should be washed out once or twice a day with a weak antiseptic solution, or with sterile salt solution. The temperature curve indicates when the intervals between the irrigations may be lengthened.

DR. JAMES TYSON said that there is no single treatment which may be said to be curative, although there are measures which co-operate with whatever tendency nature has in the way of self-immunization or in the way of elimination. He does not believe, however, that treatment is without effect and to be ignored. He emphasized the early and prompt use of dry cups, after the manner described by Dr. Roberts, and repeated for a number of days. Certain cases are favorably influenced by the application of the ice bag to the inflamed lung. Where this method has seemed to be lacking in efficiency, he thinks it is due to the imperfect method of application. The best application of cold is by cloths rung out of ice-cold water and kept in place until they become warm. The ice-cloths induce deep inspiration, which is an added advantage. They also reduce temperature. When the temperature drops to a hundred, he has the ice-cloths removed to be reapplied, if the temperature goes above this point. He has found good results to follow the use of creosol, in ten-minim does, every four hours. This drug is less irritating than creosote and less dangerous of application. He believes the diagnosis of abscess of the lungs to be more difficult than Dr. Gibbon finds it. Dr. Tyson believes that cases of pneumonia associated with delirium are less apt to be fatal in their termination, although one would naturally think that delirium is an index of the severity of the toxin.

DR. JUDSON DALAND mentioned dilatation of the right ventricle as an important complication of croupous pneumonia. The use of venesection he finds of special importance. In no condition of the blood with which he is familiar is coagulability of the blood greater than in some of these cases of croupous pneumonia. In this class of cases the use of alkaline water in large amounts, to reduce the acidity of the urine, is important. Certain cardiac stimulants are also valuable.

DR. FRANK WOODRURY thinks that possibly the upper air tract may occasionally be a source of entrance for the pneumococcus, though occasionally entrance is through the bronchial mucous membrane. He suggested the possibility that abnormal conditions of the nasal mucosa may afford entrance for the pneumococcus and that the entrance into the blood from the upper air passages may give some of the atypical forms referred to by Dr. Wilson.

DR. JAMES M. ANDERS said that attention should be directed to the limitation of the area of consolidation, to the assistance of nature in the elimination of toxins, and to the meeting of indications as they arise. He agreed with Dr. Musser that water is given too sparingly in pneumonia, and not sufficiently systematically. He emphasized especially the support and maintenance of the heart circulation. An important question is the decision of just when to aid the heart and with what agents; whether to wait until the pulse tension begins to fall off and the first sound of the heart becomes weak, or to give this aid before that period arrives. In Dr. Anders' experience, after an attack of heart failure in pneumonia, toxemia increases and death almost invariably is the result. On the other hand, when he has given cardiac tonics and stimulants sufficiently early, failing circulation has been warded off. Strychnia is the best agent for this purpose. Nitroglycerin is another valuable remedy. He believes that the pneumococcus often makes its entrance through the upper air passages.

DR. GITHENS referred to his experimental work in the injection of adrenalin chlorid into animals. The chlorid causes punctate hemorrhages throughout the lungs, and, if the dose is too large, death is caused promptly by pulmonary edema. A similar effect in man may account for some of the bad results found in pneumonia.

DR. DARLINGTON emphasized the value of the drinking of water in pneumonia. He had lobar pneumonia himself ten years ago, with six others, all of whom died. The other men had been accustomed to a different kind of drink, and it was impossible to get water into them. Dr. Darlington had taken water in great quantities in the course of the disease, and considered himself a monument to the value of the drinking of water in pneumonia. He gives quinin in large doses, and the result of the remedy, in his opinion, depends on the particular epidemic. Last year pneumonia was very fatal; this year the mortality was less. In reference to heart stimulants, Dr. Darlington observed that if the heart commences to fail, it will go on to failure, irrespective of the giving of a stimulant.

OMAHA (DOUGLAS COUNTY) MEDICAL SOCIETY.

Regular Meeting, held March 28, 1905.

Carlsbad.

DR. A. F. JONAS spoke of his personal experience as a patient, suffering from biliary calculi, requiring two operations. At the first operation the gall bladder was found to be practically filled by a stone. Recovery was prompt and he was at work again in about a month. In June, 1904, he again suffered from very severe pain, icterus and the most intolerable itching. He was operated on again and a small movable stone was found in the common duct. Recovery was very slow and tedious. The discharge of bile was ropy, touch and tenacious. The severity of the symptoms varied with the tenaciousness of the bile discharge. Pain recurred about two months after the second operation.

He therefore decided to go to Carlsbad. On the ocean trip he suffered no pain. On landing, the pain, jaundice and itching returned. The stools remained clay-colored. After a week's treatment at Carlsbad there appeared a terrific new pain. A grain and a half of morphin within a half-hour was ineffective. Ironing the abdomen with a rubber bottle filled with boiling water checked the pain. From this time he had suffered no further pain.

He was very greatly impressed with the method adopted by his physician. Directions for treatment had been written out very carefully and minutely. Beer and wine were absolutely prohibited. The hours when he was to drink the waters, the spring from which he was to drink and the quantity permitted were named. Hours were assigned for rest, for walking and for sleep. Minute directions were given as to the food permitted and forbidden. The Carlsbad waters have a very decided effect on the flow of bile. The stools became mahogany-brown after two or three days' use of the water, and remained so, with slight variation. He had been ordered to use the water from the cooler springs at first and had been told just when to change to the water of higher temperature. At the close of his stay of five weeks he was using a water of 163 degrees.

A stone in the bile passages is not the sole cause of pain and biliary colic. The irritability caused by the abnormal character of the secretions is sometimes a source of further pain, even after removal of a stone. Drainage does not always cure the infection. No greater mistake can be made by physicians than to send their patients to Carlsbad or any other springs with the general instructions to go there and drink the waters. Every patient should be placed under the care of a competent local physician. The best of the profession at Carlsbad find it necessary to have many of their patients subjected to operation for gallstones, and they agree that the waters have no value in the direction of dissolving any form of gallstone.

The season is from May to November. Carlsbad is one of the great resorts for pleasure as well as cure during the season, and about 110,000 guests go there each summer. The springs were all owned by the municipality. All guests who remain eight days are required to register and are called cure-guests. They have to pay a cure tax varying from 4 crowns to 20 crowns (of 20 cents each) for the season. Each one also pays a music tax of a smaller sum. These taxes maintain the beautiful permanent establishments, the band and the various parks. In former days the deposits from the waters of the springs would close the aperture and force the spring to seek another outlet. They have now learned to use an auger and bore out the spring once or twice a year, thus keeping it in a permanent locality. May 1 of each year the springs are all formally consecrated by church authority. A splendid band of sixty pieces furnishes music during the day. The physicians of Carlsbad are of all ranks and grades and are all private, employed there as in any other city. Hotel rates are not extortionate.

CHICAGO NEUROLOGICAL AND CHICAGO MEDICAL SOCIETIES.

Joint Meeting, held March 29, 1905.

DR. HAROLD N. MOYER, president of the Chicago Neurological Society, in the Chair.

Symptoms and Treatment of Exophthalmic Goiter.

L. F. BARKER said that while the nature of the affection is not yet wholly clear, great strides have been made toward an understanding of it. The theory that a disturbance of the thyroid gland is responsible for the symptoms of the disease is now the dominant one, and there are some points difficult to reconcile with any of the theories yet propounded. As regards the etiology, it is known that the disease occurs nearly five times as frequently in the female as in the male; that it is commonest in early life, and especially in the third decade; that it has a tendency to appear in the so-called neuropathic families; that many cases of the disease may occur in one family; that it often develops after emotional shock or prolonged emotional disturbance; that occasionally it appears as a sequel of some infectious process; and, finally, that climatic and terrestrial conditions play no important rôle in its causation, though it would appear that it is rather more common in districts where ordinary goiter is prevalent.

As the cardinal symptoms of the disease are usually described, we have the tetrad—tachycardia, goiter, exophthalmos, and tremor. In well-marked cases all these symptoms may be present, but in undoubted instances of the disease, one, two, or even three of them may be absent. Aside from the thyroid gland, it is the circulatory system, the nervous system, the eyes and the skin, the functions of which are especially disordered, though there are also evidences of disturbed activity in still other parts of the body. These circulatory disturbances were pointed out and discussed at considerable length. Perhaps the most important nervous symptom is the tremor. It has been carefully studied by Marie and is now regarded as a very constant phenomenon, though it undergoes marked variation in degree and continuousness. The eye symptoms of the disease are among the most characteristic. On the part of the skin, increased sweating is the most important symptom. Diarrhea is not infrequently a troublesome symptom. Four principal theories of the disease have been advanced: 1, That it is due to disease of the sympathetic nervous system; 2, that the seat of the malady is in the medulla oblongata; 3, that it is primarily a disease of the thyroid gland, and 4, that it is a neurosis.

Modern therapeutic measures have been largely based on the thyroid theory. The results of partial strumectomy indicate that the successful removal of a portion of the thyroid gland can lead to pure or to definite amelioration of the condition. On the theory that the thyroid secretion normally neutralizes certain general metabolic poisons in the body, Moebius and others conceived of treating cases of exophthalmic goiter in which there is presumably an excess of thyroid secretion in the body, by introducing subcutaneously or by the mouth the serum of thyroidectomized animals. It was hoped that the non-neutralized general metabolic poisons of such animals would nullify the toxic effect of the excessive thyroid secretion. As to treatment, experience has shown the great importance of general measures; complete rest for a time, fresh air, careful diet, mild balneotherapy, etc. The speaker personally favors rest, isolation and systematic psychotherapy as a routine treatment. In cases which do not respond to this or to antithyroid therapy, operation may be considered, but if it is to be done, it should be undertaken before marked cachexia develops, and before the heart is too seriously diseased.

The Larvated Forms of Exophthalmic Goiter.

DR. L. HARRISON METTLER said that a typical case must reveal tachycardia, struma, and exophthalmos. When combined or single, these symptoms will answer for the making of the diagnosis, if they are sufficiently pronounced, for their characteristics are such that they are not likely to be mistaken for similar phenomena in other diseases. The same may be said of tremor, but with less positiveness. There is a large class of cases in which tachycardia, with general nervousness, tremor, and possibly slight evanescent struma or exophthalmos occur. The heart irregularity comes on suddenly after a severe strain or sudden shock, mostly in a woman with hysterical tendencies, or with a neuropathic ancestry. It exhibits the typical traits of the Basedow tachycardia, such as the persistent elevation of the pulse beat, the peculiar thrill. With it is a general nervousness and possibly a number of symptoms, such as a mild psychosis, hyperidrosis, vertigo, aboulia, weakness, and even some general emaciation. These cases are not infrequently mistaken for simple neurasthenia, tuberculosis, and other affections. They are undoubtedly instances of the disease, but are masked and ill-defined. If they get well, with or without treatment, they remain as examples of the larvated forms; if they go on and in months or years ultimately develop all of the cardinal signs, they enter the class of typical but delayed cases. Their etiology is obscure; their symptomatology includes any of the more or less indefinite manifestations commonly recognized in neurasthenic and hysterical states, plus one of the cardinal symptoms of the disease, which cardinal symptom is usually the characteristic tachycardia. Their prognosis is uncertain, though generally it is good. Their course is brief and intermittent, and their treatment is simple and highly satisfactory. Caution is necessary in regard to hastily attributing the recovery of these cases to any specific mode of treatment, for as they so often recover with no other treatment but physical rest and mental quietude, any hasty conclusion as to the efficacy of this or that medicament may be the result of a mere *post hoc* reasoning.

Ocular Symptoms of Exophthalmic Goiter.

DR. HENRY GRADLE stated that in well-marked cases the patient had a wild, staring look, amounting to even an expression of terror. This is caused by protrusion of the eyeballs, together with retraction of the upper eyelid, whereby some of the sclera is exposed to view above the cornea. The widening of the lid aperture is peculiar to this disease. The exophthalmos varies in degree. These variations were pointed out. One-sided exophthalmos is not very rare. The diagnosis is occasionally certain, even without exophthalmos, or the latter may develop after the other cardinal symptoms have existed for a while. Conversely, protrusion of the eyes or even of one

eye only, when accompanied by the characteristic retraction of the upper lid, justifies the diagnosis of incipient or incomplete exophthalmic goiter, even though goiter and heart symptoms be absent. The retraction of the upper lid exposing the sclera to an abnormal extent is, perhaps, more characteristic of the disease than mere protrusion of the eye. Pigmentation of the skin, resembling the bronze color of Addison's disease, has been noted on various areas of the body and also around the eyes. Jellinek referred to the diffuse brown coloring of the skin of the eyelid, the upper more than the lower, as an early, though not constant and sometimes evanescent, symptom in exophthalmic goiter. Moebius has observed insufficiency of the converging power of the eyes as a fairly frequent occurrence. Pulsation of the arteries of the retina has been described by Becker as common. The protrusion of the eyeball is partly due to increased vascularity of the organ; it always diminishes after death. In some autopsies, the eyeballs, prominent in life, were even found receded to normal position, and no anomalies were observed in the orbit. In other postmortem records, the exophthalmos was explained by the increased amount of fat found within the orbit. The ocular muscles were infiltrated with fat and the optic nerves were elongated. When recovery occurs, either spontaneously or under treatment, the eye symptoms can disappear completely. There is a single case on record of the occurrence of conical cornea. The causative relation of the latter to the stretching and deformity of the cornea was suggested by Dor by the unusual improvement of the kerato-conus in both eyes, only one of which had been operated on, when the patient recovered from the goiter under the administration of thymus. Gradle recently saw a similar coincidence of these two obscure conditions—exophthalmic goiter and conical cornea.

The Serum Treatment of Exophthalmic Goiter.

DR. HAROLD N. MOYER said that if the disease is the result of a too abundant or an excessively toxic secretion of the thyroid gland, the only rational form of therapy consists either in checking the secretion or else in neutralizing the toxic products thrown into the blood stream. The first of these alternatives was beyond our control, but as the thyroid secretion is normally neutralized by certain anti-bodies present in the blood, the serum or blood of animals from which the thyroid gland had been removed, and in which these anti-bodies had been allowed to accumulate for some time, should prove capable of neutralizing the excessive or perverted secretions causing the disease. The first experiments along these lines were undertaken independently of each other by Ballet and Enriquez, in Paris, and Lanz, in Amsterdam. The former used serum, the latter the milk of thyroidectomized animals. The results obtained by either method were very encouraging. Further experiments were conducted by Burghardt, Schultes, Goebel, Moebius, and others. The same properties which were found in the blood and serum proved to be present also, although in not as great a concentration, in the milk of these animals. The latter was preferred by some experimenters, because it proved less expensive than the pure sera.

Thyroidectin is derived from the blood of thyroidectomized animals. In the preparation of the capsules not only the serum but the entire blood has been utilized. It forms a reddish-brown powder, readily soluble, non-toxic, unirritating to and rapidly absorbed from the stomach. It is put up in five-grain capsules, of which one or two are administered three times a day, according to the needs of the individual case.

Personal Experience with the Serum Treatment of Exophthalmic Goiter.

DR. SYDNEY KUH reported 11 cases of exophthalmic goiter treated with the serum of a thyroidectomized animal. He believes that he is justified in saying that it is an excellent palliative. Among the 11 cases there was one in which the effect of the treatment was temporary only, and another one in which there was no effect at all. One thing was very striking, and that was the marked and rapid improvement in the subjective condition of most of the patients. Within a few days after taking the first dose of the serum they would report a change for the better. The remedy influences the pulse as much as anything that is employed in the treatment of tachycardia in exophthalmic goiter. It increases the appetite and decreases nervousness. It has a pronounced tendency to increase the weight. Theoretically, it seems hardly probable that the results from the serum should be permanent. One may expect that after some time a smaller dose may suffice, and that an intermittent treatment only may be required. In the first case reported, the patient has been without serum for quite a long period—two and a half years—and has remained in excellent health all that time, but the author thinks it is doubtful whether she will remain in that condition unless she occasionally takes a few doses of the serum.

Cases of Exophthalmic Goiter.

DR. CHARLES L. MIX reported two severe cases of exophthalmic goiter treated by the serum. In one, the patient's pulse ranged from 120 to 140. Since taking the serum she has gained forty pounds in weight, and her pulse ranges in the nineties at present. She is able to work for her living. In addition to the improvement in tachycardia, the gain in weight and in strength, the doing away of myasthenia, there is a very pronounced effect in the condition of the thyroid gland, the neck has diminished materially in size, and the heart also has decreased in size materially.

The second case was a much more pronounced one. The patient had been seen by four eminent Chicago physicians, who gave her no hope. Her heart was giving way; edema was rapidly appearing; there was marked ascites; girth of the navel was 37 inches; pulse ranged between 140 and 150; neck measured 14½ inches in circumference. She was 20 pounds under weight, but after the disappearance of the ascites she gained twenty pounds. The patient took serum in doses of 2 c.c., three times a day, which was afterwards reduced to 1 c.c., three times a day, and then the serum was abandoned altogether, and dry serum given. The serum from a thyroidectomized horse was then injected, and patient grew worse. She took goat serum, and after taking it during the winter she gained twenty pounds in weight; pulse at present is about 111.

He believes there is a neutralization point in these cases. He noticed that if he gave too large doses hypodermically, the patient would have marked symptoms of cardiac failure, resembling those of angina pectoris, associated with pain in the arm. The danger of collapse was so great on one occasion that stimulants had to be given. After the dose had been decreased the patient got along better. On the other hand, he thinks that one can give too little of the serum. In the case with ascites he reduced the dose to ten grains a day, but this was too little, as the patient began to get worse again. She was able to take fifteen grains daily, without any particular difficulty, and he presumes in the course of time it will be possible to reduce that still further. It seems to him that the serum treatment affords very great possibilities.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Acute Prostatitis.

The causes of acute prostatitis, according to the *Cyclopedia of Med. and Surgery*, are exposure to cold and wet, traumatism to perineum, injury from instruments, calculus, foreign bodies and, most frequent of all etiologic factors, specific urethritis.

The symptoms most frequently complained of are a sensation of heat and weight to the perineum and in the rectum, frequent micturition associated with temperature of from 100 to 103 F.

The treatment consists in absolute rest, and that position which favors emptying the part of blood as much as possible,

which consists of rest in bed with the hips elevated. The local application of leeches to the perineum is of service in reducing the local congested condition of the blood vessels. Hot sitz baths or hot fomentations applied locally will assist in relieving this congestion by withdrawing the blood from the deeper parts. If there is marked vesical irritation the following combination is recommended:

℞. Acidi boracici
Sodii bromidi, āā.....3iiss 10
Tinct. belladonnæ 3ss 2
Liq. potassii citratis, q. s. ad.....℥viii 240

M. Sig.: One teaspoonful every three hours.

If the temperature is high the following combination is advised:

℞. Acidi boracici
Potassii bromidi, āā.....3i 4
Pot. citratis 3ii 8
Tinct. aconiti .....m. xxiv 1|65
Tinct. belladonnæ 3ss 2
Spts. etheris nitrosi.....℥ss 15
Aquæ q. s. ad.....℥vi 180

M. Sig.: One tablespoonful every three hours.

Morphin may be resorted to if the foregoing does not afford relief after a reasonable length of time, given in the form of a suppository, and may be combined as follows:

℞. Ext. hyoscyami .....gr. i |06
Morph. sulph.....gr. ¼ |015

M. Ft. suppos. No. i. Sig.: One such suppository once or twice daily. Or:

℞. Ext. belladonnæ .....gr. iii |09
Ext. opii aqueous.....gr. vi |40
Ol. theobromæ q. s.

M. Ft. suppos. No. xii. Sig.: One to be introduced into the rectum two or three times daily.

Straining at stool or during micturition should be avoided in order to avoid local congestion, and if the patient is unable to pass the urine naturally, it must be withdrawn by means of a catheter. The elimination by the bowels must be carefully regulated, and the diet must consist principally of milk. All stimulants should be avoided unless other conditions demand them.

Asthma.

Brodie and Dixon, in the *International Med. Annual*, have shown that asthma is due to spasm of the muscular walls of the finer bronchioles through the fibers of the vagus. Irritation of the nerve endings was found to be annulled by atropin. Lobelia produced transitory dilatation of the spasm and if the spasm was produced by nasal irritation cocain would check it. The constant current through the neck is supposed to act by preventing the conductibility through the vagus from the nerve endings, therefore relieving the spasm.

Good results have been reported from the use of atropin hypodermically, and Bass of Philadelphia reports cures by injections of five drops (.30) of a 2½ per cent. solution of silver nitrate into the neck over the vagus nerve. As to the cauterization of the septum which has been highly praised by some authorities, the general opinion prevails that if the asthmatic attack is relieved by the application of cocain to the nasal mucous membrane, then the patient can be informed that the cauterization can be done with beneficial results, but without general treatment relapses will occur, and this form of treatment can not be advised as a panacea in every case of asthma.

One of the most efficient remedies for the immediate relief of an asthmatic attack is the hypodermic administration of morphin valerianate in quarter-grain doses (.015). This form of morphin is recommended as preferable to the sulphate, because it is said to be a much more active spasmodic. Ammonium valerianate is also recommended, or the aromatic spirits of ammonia. Arsenic, belladonna, eucalyptus and lobelia are other remedies mentioned by him. He advises a plain, simple, easily digested but nutritious diet, avoiding all highly seasoned dishes and rich desserts. Alcoholic stimulants should be used very sparingly; the patient should dress warmly and have plenty of gentle exercise and plenty of sleep, with residence in a dry, warm, equable climate.

The following combination containing the three bromids is frequently sufficient to stop the attack:

℞. Sodii bromidi
Potassii bromidi
Ammon. bromidi, āā.....gr. v |30
Aquæ feniculi 3ii 8

M. Sig.: To be taken at one dose and repeated every half-hour until relief is obtained.

In the treatment of asthma Shoemaker recommends the following combination containing lobelia:

℞. Tinct. lobeliæ .....℥i 30
Tinct. hyoscyami .....℥ss 15
Aquæ camphoræ
Spts. etheris nitrosi, āā.....℥i 30
Syr. pruni vig.....℥ss 15

M. Sig.: One teaspoonful in water every half-hour or hour until relieved. Or:

℞. Aceti lobeliæ 3ss 2
Sodii bromidi 3v 20
Syr. ipecacuanhæ.....3iv 15
Glycerini .....℥iv 120

M. Sig.: Two teaspoonfuls every one or two hours. Or:

℞. Acetanilidi 3i 4
Tinct. lobeliæ 3ii 8
Syr. eriodictyi arom. q. s. ad.....℥iii 90

M. Sig.: Take one teaspoonful every fifteen minutes during the attack of asthma until relieved.

The extract of quebracho is sometimes recommended, combined as follows:

℞. Ext. quebracho 3i 4
Morph. hydrochlor.....gr. ss |03
Syr. simplicis 3v 20
Aquæ mellissæ q. s. ad.....℥iv 120

M. Sig.: One tablespoonful every two or three hours.

Or the following, containing potassium iodid, may be of value:

℞. Potass. iodidi 3ii 8
Liq. potassii arsenitis.....3i 4
Vini ipecacuanhæ 3iv 15
Tinct. hyoscyami 3iv 15
Aquæ chloroformi q. s. ad.....℥viii 240

M. Sig.: One tablespoonful three times a day, in water, after meals. Or:

℞. Chloralis hydratis
Potassii iodidi, āā.....gr. xxiv 2|65
Syr. simplicis .....℥ss 15
Aquæ .....℥iv 120

M. Sig.: Two tablespoonfuls every three hours in water. Bartholow recommends the following containing lobelia:

℞. Tinct. lobeliæ .....℥i 30
Ammon. iodidi.....3ii 8
Ammon. bromidi 3iii 12
Syr. tolutani .....℥ii 60

M. Sig.: One teaspoonful every one, two, three or four hours, as indicated. Or:

℞. Fld. ext. grindeliæ robusta.....3ii 8
Ext. lobeliæ fluidi.....3i 4
Ext. belladonnæ fld.....3ss 2
Potass. iodidi 3iss 6
Glycerini .....℥iss 45

M. Sig.: One teaspoonful in water and repeat in four hours.

Herpes Zoster (Shingles).

The local treatment indicated in herpes zoster, according to J. Nevins Hyde, consists in the protection of vesicles from rupture and the relief from pain. This may be accomplished by applying the following dusting powder locally:

℞. Morphinæ sulph.....gr. ii |12
Pulv. zinci oxidi.....℥ss 15
Pulv. camphoræ 3iss 6
Pulv. amyli 3i 30

M. Sig.: Apply locally.

Or a combination of lycopodium with pulverized opium is of value. Rupture of the vesicles, as is sometimes practiced, should not be permitted. Over the entire surface a soft piece

of lint, or of antiseptic cotton, with its meshes full of the powder, should be laid and held in place by a bandage. In the milder cases this treatment will suffice. In other cases, in which rupture has taken place and their bases have undergone erosion or ulceration, oleated lime water with zinc oxid, belladonna and opium should be applied.

The following lotions are valuable in such cases:

℞. Lotio plumbi et opii.....℥iii 90|
Sig.: Apply locally. Or:

℞. Zinci carb. precip.
Pulv. zinci oxidi
Pulv. amyli
Glycerini, āā.....℥ss 15|
Aquæ .....℥viii 240|
M. Ft. lotio. Sig.: To be applied locally.

The diachylon ointment should not be employed in the treatment of this condition, as may be said in general of other ointments. However, the author recommends the following to relieve the pain in some cases:

℞. Ext. opii aq.....gr. x-xx |65-1.30
Lanolini .....℥i 30|
M. Ft. unguentum. Sig.: Apply locally. Or:
℞. Ext. belladonnæ .....gr. x-xx |65-1.20
Lanolini .....℥i 30|
M. Ft. unguentum. Sig.: To be applied locally. Or:
℞. Cocainæ hydrochlor.....gr. xx 1|30
Menthol .....gr. x |65
Lanolini .....℥i 30|
M. Ft. unguentum. Sig.: To be applied locally.

Pulmonary Emphysema.

The following combinations are recommended in cases of pulmonary emphysema:

℞. Potass. iodidi .....℥i 4|
Tinct. hyoscyami .....℥iii 12|
Elix. calisayæ q. s. ad.....℥ii 60|
M. Sig.: One teaspoonful every three hours in water or milk. Or:

℞. Potass. iodidi .....℥ss 2|
Tinct. belladonnæ .....℥ss 2|
Spts. etheris comp.....℥ss 15|
Aquæ q. s. ad.....℥iii 90|
M. Sig.: One tablespoonful three times daily in water.

Medicolegal

Remedy Is Action Against Members of Board.—The Supreme Court of Rhode Island says, in the case of Maud A. E. Kenney vs. State Board of Dentistry, where a writ of mandamus was asked for to compel the issuance of a license to the petitioner to practice dentistry, that as to the allegation to the effect that the board was prejudiced against the petitioner, and had not given her a fair and impartial examination, it was sufficient to reply that this court could take no notice of such a charge in a proceeding of this sort. If she was rejected because of improper motives on the part of the board, her remedy was by an action for damages against the individual members thereof, alleging bad faith, and arbitrary disregard of their duties, or improper animus against the applicant, or other malversation in their discharge of duty, but not by mandamus. The court also says that whatever the purpose of the section of the statute requiring the board to keep the examination papers on file for two years might be, it was too clear for argument that such a provision had nothing whatsoever to do with regard to giving jurisdiction to this court to review the findings of the board. In short, jurisdiction in a case of this sort does not depend on the manner in which the board has discharged its duties in matters where it is called on to exercise judgment and discretion, but it depends on whether there has been an absolute refusal to perform either a ministerial or a judicial duty.

Law Against Owning or Managing Office Unconstitutional.—The Supreme Court of Washington holds, in the case of State vs. Brown, of considerable importance, in principle, to the medical profession, that the police power of the state does not authorize the enactment of a statute requiring examination by and license from a dental board before one may "own, run, or manage" a dental office. It says that it is solicitude for the physical well-being of the public, or that portion that may need dentistry work, which justifies that part of the statute providing for the examination and licensing of those who desire to "treat diseases or lesions of the human teeth or jaws, or to correct malpositions thereof." To perform such work with safety and with proper regard for health and comfort, the operator must possess technical knowledge and skill peculiar to the study and practice of dentistry. Can the same be said of one desiring to own, run, or manage a dental office? The court thinks not. To own and run property, it says, is a natural right, and one which may be restricted only for reasons of public policy, clearly discernible. To hold this portion of the statute valid would be to make possible conditions which were never designed to exist. To illustrate: Suppose a man thoroughly qualified and legally licensed as a dentist should die, leaving a perfectly and completely equipped dental office to his widow, who knew nothing of dentistry and was incapable of securing a license. By continuing to own this property any appreciable time she would become liable to prosecution under this part of the statute. Can the police or any other power be constitutionally invoked to produce such a result? The court is led to believe not. Carry the illustration a little further: The widow, not being able to sell the dental office to advantage, decides to hire competent and legally licensed dentists to treat patrons of the office, and undertakes the management herself—paying bills, collecting accounts, arranging credits, making appointments, and doing other acts necessary to the supervision and control of the business affairs of the concern. Then she becomes a criminal, if this portion of the statute have virtue, because she has managed a dental office. And yet it will scarcely be contended that any of these acts injuriously affect "the health, good order, morals, peace, or safety" of society, or menace "the lives, limbs, health, comfort, quiet, or property" of the patients treated in such office. Many similar illustrations will readily occur to the mind given to the contemplation of the natural results reasonably to be anticipated under the operation of such a statute. Should the owner or manager hire operators not legally qualified, or should they participate in the treatment or operations mentioned in the other portion of the statute, they would, of course, be amenable to and punishable under those provisions. But the court is unable to say or to perceive that the health, moral, or physical welfare of the public, or any of the personal or property rights of its individuals, are endangered by the ownership and management of a dental office, so long as those employed therein to do the actual dentistry work are qualified and licensed as by law required.

Burden of Proof and Presumed Continuance of Insanity.—The Supreme Court of Ohio says, in the case of State vs. Austin, that it must now be taken as the well-established rule of law in that state that in a criminal case when the insanity of the defendant is pleaded or relied on as a defense, such defense is affirmative in character, and the burden of maintaining or establishing the same by preponderance of the evidence rests with the defendant. The authorities would seem also to be in entire accord on the proposition that where a person is indicted and prosecuted for the commission of a crime, in order to make the insanity of the accused available and effective to him as a defense, such insanity must be shown to exist at the very time of the commission of the act complained of. The law requires that the insanity proved, in order that it may be defensive shall relate to the time of the commission of the alleged criminal act, and proof of the insanity of the defendant at a time prior thereto cannot of itself exempt him from punishment or acquit him of criminal responsibility. While it is entirely competent in a criminal case, where the sanity of the accused is put in issue, to show his mental condition both before and after the time of the commission of the alleged criminal act, yet from such evidence of his previous or subsequent mental condition no legal presumption arises that he was insane at the time he committed the criminal act, and

such evidence is proper for the consideration of the jury only in so far as it reflects or throws light on, or may aid the jury in determining, the question of whether in fact the insanity of the defendant existed at the time of the alleged criminal act. It appeared from the record in this case that the defendant, who was accused of having committed a homicide in August, 1903, had been adjudged insane and, in June, 1900, was committed to a state hospital for the insane, from which he was discharged September 1, 1900. He was afterwards readmitted to the same institution July 29, 1901, and discharged therefrom as restored on December 21, 1901. The nature of his disease or malady was, as testified by the physicians, that of "recurrent insanity or recurrent mania, with suicidal and homicidal tendencies." The court holds that the following instruction was properly refused: "Proof of prior insanity throws on the state the burden of proving the crime perpetrated during a lucid interval. It defeats the legal presumption of sanity and creates a legal presumption of continued lunacy." The court says that the particular vice of this instruction was that it stated the rule too broadly. It is doubtless true that insanity is often chronic and permanent; for instance, from senile dementia and congenital idiocy there can be, as a rule, no recovery; and, where insanity in such form is often proven to exist, its continuance may be inferred or presumed, such inference or presumption, however, being one of fact and not of law. There are, perhaps, but few other forms of insanity of which recovery may not be predicated, at least as a contingency, and as to these no presumption whatever is indulged or recognized that they are continuing in their nature. Therefore, the burden being on the defendant to show that he was insane at the time of the commission of the particular act charged, proof of mere temporary or recurrent insanity, such as was shown in this case, at a time prior thereto, was clearly not sufficient to rebut or to overcome the legal presumption of his sanity, and to impose on the state the burden of proving that at the time the act was committed the defendant was then sane. The burden of proof does not shift, but all along it rests with the defendant, and, if in any case he would overcome the legal presumption of his sanity and would exonerate himself from liability, he must show by a preponderance of the evidence that at the time of the commission of the alleged criminal act he was then so far mentally deranged or unsound as not to be answerable or accountable for his act. While proof of prior insanity is competent, whether a mental condition shown to exist has continued down to the time of the commission of the alleged criminal act is solely a question of fact to be determined by the jury. And the defendant in a criminal case who sets up insanity as a defense does not relieve himself from showing his insanity at the very time of the commission of the criminal act by proof merely that he was insane at an earlier time.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

April 8.

1 *Significance of the Urinary Examination in Women. G. L. Hunner, Baltimore.
2 *Optic and Ocular Factors in the Etiology of Scoliosis of School Children. G. M. Gould, Philadelphia.
3 *Advantages of Tendon Transplantation. H. A. Wilson, Philadelphia.
4 *Extrauterine Pregnancy at Full Term; Total Extirpation of Uterus and Placenta by a New Technic: Recovery. H. N. Vineberg, New York.
5 *Pathologic Changes Resulting from Prostatic Enlargement. C. E. Barnett, Ft. Wayne, Ind.
6 *Enterostomy. J. W. Long, Greensboro, N. C.
7 Two Cases of Landry's Paralysis: One Terminating in Recovery, the Other in Death. T. Diller, Pittsburg, and C. L. Billard, Allegheny.

1. **Urinary Examination in Women.**—Hunner urges a more frequent examination of the urine in cases of obscure diagnosis and discusses some simple methods of examination, citing illustrative cases.

2. **Factors in Etiology of Sclerosis.**—According to Gould, the school desks and seats, imperfect and unhygienic as they may be, are not the primary or chief factors in the production of morbid writing postures, and hence do not, *per se*, cause spinal curvature. They are not the cause of slant handwriting, nor has slant writing any relation, as a cause, to disease or to malposture, but is solely a result of malposture. With the head and body erect, the paper straight before the median line of the body and the penholder held as commanded, the writing and the writing field about the penpoint are hidden by the writing hand. The pupil skews the paper, tilts the head to the left and grasps the holder differently, all in order to bring the writing field and letters being made into clear view, and especially of the right or "dominant" eye. Beside the bending of the head and usually also of the body, to the left, there is a synchronous rotation or torsion of the head to the right in order to bring the predominant 90 and 180 degrees axes of astigmatism into alignment with the upright strokes and lateral lines of the pen and paper. The cervical vertebræ are thus forced into a combination of three morbid positions, caused by bending the head forward, canting it to the left, and rotating it so that the chin is turned to the right. There is thus produced a threefold increase of the scoliosis producing agency which is transmitted to the dorsal and lumbar regions of the spine in the effort at compensation. Other topics discussed are the head tilting from astigmatism, the organic results of such tilting, and the prophylaxis and cure of the malposture.

3. **Tendon Transplantation.**—Wilson concludes from his personal experience that tendon transplantation, alone or combined with arthrodesis or other bone operations, offers prospects of materially adding to the comfort, convenience and usefulness of a very large class of patients otherwise more or less dependent on forms of mechanical apparatus. Arthrodesis alone possesses advantages in cases incapable of benefit from tendon transplantation. Various forms of osteotomy, osteoclasis and other bone operations are available for the removal of deformity and for the prevention of undue strain on the soft parts around the joint.

4. **Extrauterine Pregnancy.**—In the case described by Vineberg the pelvis was filled with a hard, nodular mass which seemed continuous with the pelvic wall. The patient was very much emaciated and exhausted, and to save her life Vineberg adopted a new technic. He first ligated the ovarian and uterine vessels on the free side, cutting the uterus across at the level of the os internum without making any attempt to separate it from the mass to which it was most intimately united, and then ligating the uterine artery on the involved side. In this way he cut off the main blood supply before making the attempt to enucleate the enormous placental mass. The work of enucleation was also made easier by enabling the operator to work from below upward. The patient made an uneventful recovery.

5.—See abstract in THE JOURNAL of October 29, p. 1326.

6. **Ibid.**—December 24, p. 1988.

Medical Record, New York.

April 8.

8 *Treatment of Pyelitis. H. A. Kelly, Baltimore.
9 Etiology of Enlarged Prostate. L. B. Bangs, New York.
10 *Microscopic Examination of Fasting Stomach Contents and Its Diagnostic Value. W. Ackerman, Milwaukee, and L. M. Gompertz, New Haven, Conn.
11 Acute Cholecystitis in Puerperium. Report of Two Cases; Cholecystostomy; Recovery. H. N. Vineberg, New York.
12 Conservative Treatment of Protracted Cases of Acute Otitis Media Purulenta, with Its Complications. A. Wiener, New York.
13 *Modification of Heller Test for Albumin in the Urine. A. S. Payn, New York.

8. **Treatment of Pyelitis.**—Kelly endeavors to show from a personal experience extending over sixteen years that pyelitis is an affection of the utmost importance, and that in one of its most important phases, namely, its earlier stages, it is still rarely recognized, or, when found, is often thought worthy of but little attention because it is not immediately provocative of serious symptoms. A pyelitis of recent origin, which is let alone, often gets well spontaneously by the natural process of

irrigation as the urine sweeps the infecting organisms down through the renal pelvis and the ureter into the bladder. If there is an obstruction at any point causing a damming up of the urine, the pyelitis is almost sure to linger in a chronic form. Many cases of pyelitis remain for long periods *in statu quo*, while other cases grow worse, ending in a high grade of pyelonephritis or the kidney becomes converged into an abscess sac. A pseudo-cure may take place by the closure of the sac, in which case the abscess may either persist or may rupture into the bowel, into the pleura, into the loin, into the groin, or even into the peritoneum. It is important to take cognizance of a pyelitis of any grade whatever, as it may, at any time, become a menace to the functional value of the kidney or even to life itself.

10. **Diagnostic Value of Microscopic Examination of Stomach Contents.**—Attention is directed by Ackerman and Gompertz to the fact that not enough attention is paid to the importance of microscopic examination of the stomach contents. They advocate that when the diagnosis is in any way obscure it should be a routine practice to make a thorough microscopic examination of the contents of the fasting stomach. Such examination is especially indicated when the slightest suspicion exists of gastrosuccorrhea, stagnation—whether due to benign or to malignant obstruction—or ulcerating cancer not causing stenosis. The presence or absence of hydrochloric acid is easily determined with a microscope. The presence of unchanged epithelial cells signifies absence of HCl and pepsin; whereas the presence of free nuclei of leucocytes and of epithelial cells is positive evidence of the presence of hydrochloric acid and pepsin. The presence of sarcinæ, yeast cells and chains, food remnants, such as starch granules, muscle fibers, etc., prove the existence of stagnation. If the microscope shows the constant presence of pus and blood, and their origin can be excluded as coming from an acute phlegmonous gastritis or purulent inflammation from other parts, a positive and early diagnosis of ulcerating interosteal carcinoma can be made long before a tumor is palpable or characteristic symptoms are present. In all suspected cases, especially with progressive emaciation, anorexia, gastric distress, etc., without stagnation, but with achylia gastrica, an endeavor should be made to procure some of the fasting stomach content for examination. Infusoria are always found with pus and blood, and these conditions are present only in cases of interosteal carcinoma not attacking the pylorus. They are found long before the appearance of a tumor. In the stagnating stomach contents containing lactic acid the sarcinæ are supplanted by the Oppler-Boas bacilli, and these should be considered of even more diagnostic importance as indicating malignant stenosis than the finding of sarcinæ in benign obstruction. In pyloric carcinoma the situation of the growth is such that it is hidden by the liver and the detection of these bacilli often leads to a diagnosis long before the tumor is palpable. However, if from any cause whatsoever, a pyloric obstruction occurs, the Oppler-Boas bacilli are liable to be found in the stagnating stomach contents. According to Cohnheim, about 99 per cent. of the cases with stagnation and Oppler-Boas bacilli or lactic acid are pyloric carcinoma, therefore, the presence of the Oppler-Boas bacilli can be regarded as an indicator for operative procedure.

13. **Modification of Heller Test.**—Payn places the inclined tube which contains the Heller in a low flame, heating the urine just short of ebullition, care being taken not to disturb the contact. After a few moments the tube is examined by placing it against a dark background, when it will be noted that the urine is not only clarified, but at the line of contact there will be found precipitated small quantities of albumin not apparent when the test is performed cold.

Medical News, New York.

April 8.

14 *Further Notes on the Function of the Parathyroid Glands. W. G. MacCallum and C. F. Davidson, Baltimore.
15 Two Cases of Pernicious Anemia Due to the Dibothriocephalus Latus. A. Meyer, New York.
16 Case of Dibothriocephalus Latus Infection, Causing Pernicious Anemia, with Complete Recovery. W. Gilman Thompson, New York.
17 *Symptoms and Diagnosis of Cerebrospinal Meningitis. H. L. Elsner, Syracuse.
18 *Eye Symptoms of Cerebrospinal Meningitis. A. E. Davis, New York.

14. **Function of Parathyroids.**—This is a further report by MacCallum and Davidson of the results of their experiments carried out for the purpose of determining the function of the parathyroid gland. They found that after complete parathyroidectomy the life of the animal can be maintained only with the greatest difficulty by the injection intravenously of relatively large quantities of parathyroid material. They believe that the cases in which the symptoms are relieved for a long time by insignificant doses given subcutaneously, are instances in which the extirpation of the parathyroids was incomplete. From this it follows that the treatment of the tetany which has been seen to follow the extirpation of the thyroid (with the parathyroids) in human beings, by the use of parathyroid extracts, would probably be almost impracticable, although the use of such material might, perhaps, be beneficial in those cases in which symptoms are due to a less intense parathyroid insufficiency. The condition is different from that found after extirpation of the thyroid alone, in that the symptoms appear so rapidly, are so quickly fatal, that there is no time to apply the usual methods of administration of the organ extracts which are so effective in the case of myxedema. The emulsion or extract of parathyroid, to produce its maximum effect, must be introduced into the veins in considerable quantity.

17. **Cerebrospinal Meningitis.**—Elsner rehearses his experiences with cerebrospinal meningitis in the central counties of New York state. He says the disease may be either sporadic or epidemic and that it appears every year. House epidemics in which from two to five members of a household were attacked, without further spread of the disease, has been met on five different occasions. Another interesting fact noted was the presence of other infectious diseases of the nervous system during the prevalence of even limited epidemics of cerebrospinal meningitis. On three occasions within the past ten years cases of cerebrospinal meningitis, acute choliomyelitis anterior and Landry's paralysis have occurred almost side by side. With either sporadic or epidemic cerebrospinal meningitis mixed infection is not uncommon; occasionally the pneumococcus may be found with the Friedlander bacillus. Elsner says the pneumococcus as certainly causes cerebrospinal meningitis as it does malignant endocarditis, and both of these fatal infections without pulmonary inflammation. The infection is malignant, the clinical picture is characteristic, cerebral, spinal and peripheral symptoms are abundant. Early death is the rule. These cases are less frequent than are those associated with pneumonia. Cases of cerebrospinal meningitis with pneumonia have been uniformly fatal in Central New York. In the majority of cases it is exceedingly difficult to diagnose this complication. Timely and frequent lumbar punctures offer aid which may prove conclusive. Meningococcus pneumonia may complicate cerebrospinal meningitis. Pneumococcus meningitis may follow distal infection, such as extraction of the teeth, following an attack of otitis media, and subsequent to a transverse fracture at the base of the brain.

18. **Eye Symptoms of Cerebrospinal Meningitis.**—Davis divides the eye symptoms of this affection into two groups—motor and visual. Besides these two main groups there is frequently present a conjunctivitis, which at times is attended with marked swelling and edema of the lids. Among the motor symptoms are mentioned paralysis of the third, sixth, fourth, ophthalmic division of the fifth, and seventh nerves, which may be partial or complete from pressure on the nerve trunks. There also may be conjugate deviations, nystagmus and ptosis from cortex lesions. Optic neuritis, neuroretinitis and perineuritis, optic atrophy, panophthalmitis, photophobia, keratitis, iridochoroiditis and venous congestion of the fundus and visual symptoms are sometimes present. Although, as a rule, the diagnosis of cerebrospinal meningitis may be made from the general symptoms, there are cases in which these are not well marked and in which the eye symptoms, especially

where there are changes in the fundus, may serve to clear up the diagnosis. Inequality of the pupils, particularly if accompanied by squint, should place the general practitioner on his guard. The prognosis in these cases in which there are eye lesions, especially when the fundus is affected, is always more grave than in those cases in which there are no eye symptoms. Of eight cases affected with neuroretinitis four died, two were cured, and two were not followed to a conclusion, making the percentage of deaths equal to 66.6 per cent., while in 10 cases where there were no eye symptoms there were but 50 per cent. of deaths.

New York Medical Journal.

April 8.

19 Operative Treatment of Chronic Suppurative Otitis. A. B. Duel, New York.
20 *Spondylose Rhizomyelia: Study of the Relative Frequency of Spinal Involvement in Rheumatoid Arthritis with Autopsy Findings. D. J. McCarthy, Philadelphia.
21 Asepsis and Antisepsis in Obstetrics: Also "Sterile Gauze" and "Sterile Water." J. M. Mabbott, New York.
22 Clinical Lecture on a Case of Typhoid Cholecystitis. J. C. Da Costa, Philadelphia.
23 Food Preservatives and Food Adulterations. H. W. Wiley, Washington, D. C.
24 Gonococcus in Vulvovaginal Region. H. J. Boldt, New York.
25 *Two Unusual Conditions Affecting the Gastric and Epigastric Regions. W. Moser, Brooklyn.
26 Atony of Rectum and Anal Sphincters: Its Etiology, Pathology, Diagnosis and Treatment. W. Bodenhamer, New Rochelle, N. Y.
27 Diet in Typhoid Fever. (To be concluded.) S. Stalberg, Philadelphia, H. M. Pierce, St. Louis.

20. **Spondylosis Rhizomyelia.**—A study of the relative frequency of spinal involvement in rheumatoid arthritis is presented by McCarthy and two cases are reported for the purpose of contrasting it with rheumatoid arthritis associated with involvement of the spinal column. One of the cases was of considerable interest on account of the early age at which it developed and because of the presence of sensory and reflex symptoms indicative of root and spinal involvement. The author also cites twelve cases of rheumatoid arthritis with spinal involvement.

25. **Two Unusual Conditions.**—The first case reported by Moser was one of epigastric myoclonus or gastroclonus; the second case was one of hysterical acute gastrospasm.

Boston Medical and Surgical Journal.

April 6.

28 History of the Boston Society of Psychiatry and Neurology for Twenty-five Years. W. Channing, Brookline.
29 *Surgical Treatment of Nephritis. A Résumé. P. Thorndike, Boston.
30 Diet in Nephritis. H. Jackson, Boston.
31 Some Further Observations on Leucocytoxins. H. A. Christian and T. F. Leen, Boston.

29. **Surgical Treatment of Nephritis.**—Following the decapsulation of kidneys in rabbits, in normal dogs, in dogs with induced nephritis, in dogs with infarcts of kidneys, and in dogs with normal kidneys, but with additional work thrown on them, Thorndike found that in all his cases of two days and under and in controls, where the capsule was removed, for over two-thirds the surface there was a certain amount of immediate increase in size of the decapsulated kidneys, persisting up to one month at least, and afterwards a decrease to approximately normal size, complete at the end of six months. There was congestion, moderate in degree, most marked in the intertubular blood vessels in the cortex, lasting from three to five days after the operation. No histologic change in the renal epithelium was noted, but a new capsule, very vascular at first, and from two to four times the thickness of the old, was well marked at the end of eight days. This new capsule arises chiefly from the connective tissue cells of the intertubular connective tissue, but in part from the retroperitoneal connective tissue which is present in the new bed of the kidney. No new vessels are formed which anastomose with those of the kidney. The increase in size is due primarily to the increase in blood supply, possibly resulting from the removal of the capsule. Thorndike says that the evidence at hand proves that a new capsule forms within a few weeks after operation, but that the establishment of a collateral circulation, sufficient in degree to materially affect the renal tissue, may at present fairly be doubted.

Lancet-Clinic, Cincinnati.

April 8.

32 Puerperal Convulsions—Cases and Treatment. M. A. Tate, Cincinnati.
33 Malignant Growths of the Eye. A. O. Pfingst, Louisville, Ky.
34 Question of Wound Infection, with Special Regard to Those Due to Catgut. J. W. Robinson, Chicago.

St. Louis Medical Review.

April 1.

35 Some Things Proctologic. W. M. Beach, Pittsburg.
36 Penetrating Gunshot Wounds. J. Y. Brown, St. Louis.
37 Review of Treatment Immediately Before and After Abdominal Section. L. S. McMurtry, Louisville.
38 Some Points in the Practice of Hypnotism. C. L. Tuckey, London.
39 Rupture of the Gall Bladder (Spontaneous and Traumatic, with and Without Operation), an Historical Review of 273 Cases. (Concluded.) B. M. Ricketts, Cincinnati.

American Journal of Obstetrics, New York.

March.

40 Can Our Present Method of Utilizing the Principle of Axis-Traction in Obstetric Practice be Further Developed? A. C. Jacobson, Brooklyn.
41 Prevalence of Puerperal Septicemia in Private Practice at the Present Time, Contrasted with That of a Generation Ago. S. P. Warren, Portland, Maine.
42 Cesarean Section for Dystocia Following Myomectomy. J. C. Hubbard, Boston.
43 Indications for Cesarean Section: Report of Two Cases: Recovery. J. F. Moran, Washington.
44 Theories of Eclampsia. J. B. De Lee, Chicago.
45 Treatment of Eclampsia. C. B. Reed, Chicago.
46 Application of Forceps in Contracted Pelves. E. Sothoron, Washington, D. C.
47 Fibromyomata of Uterus. D. G. Lewis, Washington, D. C.
48 Sequelæ and Treatment of Abortion. A. B. Keyes, Chicago.
49 *Hand Sterilization with Special Reference to Use of Oil of Cloves. J. C. Webster, Chicago.
50 *Hand Sterilization by Oil of Cloves. E. Rosenow.
51 Postoperative Complications Involving the Bronchi, Lungs, etc. G. B. Miller, Washington, D. C.
52 *Non-Operative Treatment of Eclampsia. C. S. Bacon, Chicago.
53 *Technic of Operation of Ventrosuspension of the Uterus. II. Beyea, Philadelphia.
54 *Results of Ventral Suspension of Uterus at Johns Hopkins Hospital. G. R. Holden.
55 *Cesarean Section Following Ventrofixation. M. A. Smith, Boston.
56 Uncomplicated Varicose Veins of Female Pelvis. S. M. Miller, Peoria, and A. B. Kanavel, Chicago.

49. **Hand Sterilization.**—Webster describes his method as follows: The hands are scrubbed for five minutes with any good soap and hot water, the latter being frequently changed. A boiled stiff nail brush is used. The skin is then dried with a sterile towel and rubbed for one minute with alcohol in order to remove any remaining moisture. When it is dry, unpurified clove oil is rubbed into the skin for four or five minutes and afterward washed off with alcohol. Clove oil is a powerful solvent of fats and penetrates deeply into the skin. The unpurified oil is less expensive and is probably a better germicide, its impurities being acid in nature, than the purified oil. The hands thus cleansed are thoroughly rubbed with sterilized talc powder and covered with smooth dry rubber gloves which have been boiled for fifteen minutes. The skin of the hand is the same at the end of the operation as at the beginning. It is very smooth, the sterile talc having been rubbed into all the irregularities. The operator should wear gloves of medium thickness, which are made from a model of his hands, thus securing a perfect fit.

50. **Id.**—Bacteriologic experiments made by Rosenow with a view to determining the value of the above method showed conclusively that clove oil as an antiseptic is far superior to creolin (80 per cent.) and bichlorid (1 to 2,000). It was also found that clove oil possesses a marked degree of antiseptic power.

52. **Non-Operative Treatment of Eclampsia.**—All forms of non-operative treatment of eclampsia are classified by Bacon under the two heads of eliminative and symptomatic, which includes antispasmodic and supporting. As eliminative treatment are included all measures of securing catharsis, diuresis and diaphoresis, while symptomatic treatment includes the administration of morphin, chloral, chloroform and ether, veratrum viride and oxygen inhalation. In the pre-convulsive stage attention to diet and the bodily activities with regulation of the elimination are practically the only means of con-

trolling the disease and of averting its climax. Strict rest in bed for serious cases is of equal importance to a proper diet. As diuretics the rule will exclude specifically the metals, coal-tar products, volatile oils, digitalis, aloin, as well as most of the salts of the alkali. Salt solution should be used with great caution. To control the convulsions Bacon favors the hypodermic use of morphin, beginning with an initial dose of from 1/3 to 1/2 grain when the patient is first seen, and then giving from 1/6 to 1/4 grain after each subsequent attack until from 1 grain to 1½ grains are given. Danger of asphyxia is avoided by the use of oxygen. Veratrum viride he regards as a dangerous heart poison which can well be discarded from our armamentarium. Oxygen inhalation is especially indicated during an attack when there is great danger of asphyxiation. In case morphin is given in large doses oxygen should be used to counteract the slowing of the respiration, and it should be administered constantly when an anesthetic is given. It is one of the first things to be procured when taking charge of a case of eclampsia. The conditions existing after the successful delivery of the patient either spontaneously or by operative measures call for supporting or symptomatic eliminating treatment in which besides the agent already mentioned strychnin and nitroglycerin may be valuable.

53. **Ventrosuspension of Uterus.**—See abstract in THE JOURNAL, Jan. 14, 1905, p. 162.

54. **Id.**—From April, 1892, to June, 1903, the uterus has been suspended to the anterior abdominal wall over 900 times at the Johns Hopkins Hospital. In 445 of these cases, Holden has succeeded in securing a more or less complete postoperative history. The intervals which elapsed between the operation and the subsequent report vary from four months to eleven years. In 184 cases suspension alone, or suspension preceded by dilatation and curettage was done. In 154 cases, plastic operations on the perineum were also done in addition to the suspension. In 46 cases pelvic inflammatory disease was present to such an extent that, in addition to the suspension, portions of the adnexa were removed. In 61 cases suspension was associated with miscellaneous operations, namely, kidney operations, appendectomies, myomectomies, etc. In considering the results obtained in the relief of the subjective symptoms, Holden includes only those cases in which the retroposition was the sole or a prominent factor. In no case was the period from operation to report less than one year. Of 182 cases in which suspension alone was done, 109 cases, or 60 per cent., were successful; 33 cases were relieved partially; 40, or 21 per cent., had no relief. Of 154 cases of suspensions with plastic operations on the outlet, 102, or 66 per cent., were successful; 19 cases were relieved partially; 33, or 21 per cent., had no relief. The prognosis in nulliparæ after suspension of the uterus is not so favorable as in multiparæ with retroposition associated with relaxation of the outlet provided that the relaxed outlet be repaired in addition to the suspension. Of 120 nulliparæ, 109 suffered from dysmenorrhea before operation. Fifty-one patients were absolutely or very greatly relieved; 33 had no relief; the remaining 36 did not state their condition. In 202 multiparæ, dysmenorrhea occurred in 113 cases. In 70 of these, a definite statement was made as to dysmenorrhea after operation; forty-three patients were absolutely or very greatly relieved; 22 had no relief. In 69 of the 445 cases, examinations were made at periods varying from four months to nine years after the operation. In 8 of these 69 cases, the uterus was again in retroposition; in 5 of these 8, recurrences occurred after pregnancies. In 59 cases, the uterus was movabe, but could not be thrown into retroposition. In 2 cases it was fixed to the anterior abdominal wall. An examination of the suspensory ligament in 19 cases, in which a secondary laparotomy was performed later, made it evident that the length of the ligament does not depend on the time which has elapsed since the operation nor on the diameter or breadth of the ligament. The length of the ligament varied from 2 cm. to 18 cm. in 238 of the cases the patients were in the child-bearing period, were not sterilized by operation and were married. One hundred and forty-five reported that they had not borne children since operation; 23 made no report on this subject, while 69 had borne children since operation. The number of labors in these 69 women was 83; 66 of these were entirely normal. In the others, the abnormalities were: Severe nausea and vomiting, 1 case; puerperium and labor normal, died of puerperal septicemia, 1; retained placenta, 1; phlebitis, 1; child still-born, 3; forceps were used in 5 cases. In 2 of these dystocia arising from the suspension can be excluded. Five patients complained of abdominal pain during pregnancy, 4 of them were delivered normally, forceps were used in 1 case. Fourteen cases were examined after labor; 2 cases two weeks after; the others at periods varying from three months to six years. In 5 cases the retroposition had recurred. In 46 cases of pelvic inflammatory disease associated with retroposition of the uterus various portions of the adnexa were removed in addition to the suspension of the uterus. Of the 46 cases, 35 were entirely cured or very greatly relieved; but 2 of these required a second operation for pelvic inflammatory disease. Twenty-nine patients were married, in the child-bearing period and were not sterilized by the operation. Three of these had children after the operation. The right tube and ovary had been removed in 2 cases, the left ovary in 1 case.

55. **Cesarean Section Following Ventrofixation.**—Smith's paper may be summarized as follows: 1. Ventrofixation is contraindicated during the child-bearing period. 2. If ventral suspension is undertaken, care must be exercised that it does not unwittingly become a fixation. 3. Alexander's operation, or some one of the many varieties of intra-abdominal shortening of the ligaments are more suitable operations for women at this period. 4. In severe cases of dystocia from this cause, immediate cesarean section is preferable to prolonged attempts at vaginal delivery. 5. To prevent a recurrence of the trouble the offending band should be removed.

Fort Wayne Medical Journal-Magazine.

March.

57 Arthritis Deformans. L. P. Drayer, Fort Wayne.
58 Treatment of Arthritis Deformans. A. P. Buchman, Fort Wayne.
59 Diseases Frequently Mistaken for Acute Inflammatory Rheumatism. B. Van Swerингen, Fort Wayne.
60 Clinical Results of High-Frequency Currents. A. W. Crane, Kalamazoo, Mich.

Annals of Surgery, Philadelphia.

April.

61 *Pathology and Etiology of Obstructive Hypertrophy and Atrophy of the Prostate Gland. P. M. Pilcher, New York.
62 Has the Catheter a Place in the Treatment of Chronic Prostatic Hypertrophy? P. Thorndike, Boston.
63 *Prostatism Without Enlargement of Prostate. C. H. Chetwood, New York.
64 Some Anatomic Points Connected with Prostatectomy. F. S. Watson, Boston.
65 Question of Priority in the Adoption of the Method of Total Enucleation, Suprapubically, of the Hypertrophied Prostate. E. Fuller, New York City.
66 *Treatment of Prostatic Hypertrophy by Enucleation Through a Suprapubic Incision. H. Lilienthal, New York.
67 Suprapubic Prostatectomy with Nitrous Oxid Anesthesia. J. Wiener, Jr., New York.
68 *Conservative Perineal Prostatectomy. H. Y. Young, Baltimore.
69 Cause of Incontinence as a Sequel of Prostatectomy. E. W. Ruggles, Rochester, N. Y.
70 *Choice of Operative Method for the Removal of the Hypertrophied Prostate. L. S. Pilcher, New York.
71 Study of Various Forms of Prostatic Hypertrophy from Postmortem Specimens and by the Cystoscope, with Reference to Operation. J. H. Cunningham, Jr., Boston.
73 Transperitoneal Ligature for Aneurism of External Iliac Artery. O. J. Currie, Pietermaritzburg, Natal.
74 Osteoma of the Frontal Sinus. H. Hastings, Los Angeles.

61. **Pathology and Etiology of Enlarged Prostate.**—Pilcher summarizes his paper as follows: 1. Pathologically there are three types of prostates causing urinary obstruction: (*a*) the large, soft type; (*b*) the hard, small, contracted type, and (*c*) the mixed type. 2. Infection does not influence the variety of the pathologic change. 3. A contracted form of prostate is not a secondary stage of the large, soft type of hypertrophied prostate, but is distinct from it. 4. In many cases of hypertrophy of the prostate there is present a true muscular hypertrophy. 5. In some of the atrophic cases, the glandular elements are relatively diminished, and the muscular elements relatively increased. 6. Gonorrhea is not an important etio-

logic factor in the production of this disease, and there is no necessity for assuming it to be. 7. The theory of obstruction to the ducts causing passive dilatation of the glandular elements does not satisfactorily explain the pathologic findings. 8. Hypertrophy of the prostate results from glandular overgrowth influenced by the degenerative changes of old age and other agents which tend to produce the formation of fibrous connective tissue in an actively functionating gland.

63. **Prostatism Without Enlarged Prostate.**—The experience derived from the study and treatment of 36 cases leads Chetwood to the conclusion that contracture of the neck of the bladder is a common cause for vesical obstruction; that its relief is safe and sure by means of a galvano prostatotomy through a perineal opening; and, finally, that it is often an explanation of what has been termed prostatism without enlargement of the prostate.

66. **Suprapubic Incision in Prostatectomy.**—From an experience in 31 cases, Lilienthal believes that the suprapubic route is the safest and most thorough of all the operations for the relief of prostatic obstruction. It is radical; no important vessels or nerves are cut, the urethra is not injured and wounding of the rectum is exceedingly rare. Palpation and inspection of all parts of the interior of the bladder are easily and accurately made. There is no need for pre-operative cystoscopy. There is an almost total absence of shock and the patient may be out of bed in forty-eight hours. No part of the urethra having been removed, treatment by the passing of sounds is avoided. The operation may be easily performed under nitrous oxid anesthesia. The method is a rapid one, it may, if necessary, be performed in two stages and impotency rarely supervenes. Great care and watchfulness are necessary during the course of the after-treatment.

68. **Conservative Perineal Prostatectomy.**—Young details the results obtained by prostatectomy through the perineal route by the technic previously described by him. During the past two years, he has operated on 75 patients, 4 being over 80 years of age; 23 over 70; 29 over 60; 14 over 50, and 5 under 50. Among these 75 cases there were no deaths definitely attributable to the operation, although 4 patients died; 1 five weeks after operation, from uremia; 1 two weeks after operation, from pulmonary embolism; 1 two weeks after operation, from double pro-hydronephrosis, and 1 on the twenty-fifth day, from double pneumonia. In only two cases of the entire series was there residual urine of any consequence. All the patients can void urine naturally, and no case of continual incontinence has occurred. In a large proportion of the cases the sexual power was maintained after operation. A perineal fistula persisted in only 2 cases. In one of these the prostatic tissue was found to be carcinoma. Young says that while the Bottini method is the simplest and quickest for a certain limited number of cases, it is not so safe and nothing like so uniformly certain of relieving the obstruction as the perineal enucleation.

70. **Prostatectomy.**—This exhaustive article by L. S. Pilcher is concluded with the statement that, as a rule, the method of free curved transverse perineal incision with full exposure of the gland in the operation wound is to be preferred.

American Journal of Orthopedic Surgery, Philadelphia.

April.

75 Study of Angles and Lines Defining the Relationship Between the Pelvis and the Femur. Stewart L. McCurdy, Pittsburg.
76 Trans-pelvic Lines for Determining Displacement at the Hip. Stewart L. McCurdy, Pittsburg.
77 *Three Cases of Double Hip Dislocation, Supplemented by a Report of Seven Cases Operated on by Professor Lorenz. A. J. Steele, St. Louis.
78 Sacro-Iliac Disease in a Young Child. A. Thorndike, Boston.
79 Means of Lengthening, in the Lower Limbs, the Muscles and Tissues which are Shortened Through Deformity. A. Codivilla, Bologna.
80 Two Cases of Suppuration of Retromesenteric Lymph Nodes. J. C. Pegram, Jr., Providence.
81 *Operative Treatment of Pes Cavus. H. M. Sherman, San Francisco.
82 Apparatus for Handling Cases of Acute Pott's Disease in Adults. C. Riely, Baltimore.
83 Apparatus for Developing *X*-Ray Negatives. C. Riely, Baltimore.
84 Two Cases of Congenital Dislocation of Shoulder Joint. F. E. Peckham, Providence.
85 Value of *X*-Ray Negatives in Study of Orthopedic Pathology. R. B. Osgood, Boston.
86 Sayre's Wire Cuirass. A. G. Cook, Hartford.
87 Consideration of Treatment of Flexible Flat Foot. E. H. Bradford, Boston.

77. **Double Hip Dislocation.**—Steele summarizes the results obtained in the hip cases operated on in St. Louis by Lorenz in November, 1902. There were 7 cases; 10 hips; patients were all females; 3 double and 4 single dislocations. Of the 10 hips operated on 6 had anterior replacement, 2 are in the dorsal position, and 2 (same patient) "not in anatomic reposition" (Dr. Mueller). Whether or not the anterior replacements will improve in functional use remains to be seen. Steele believes that in one case, at least, the head was in the socket on removal of the plaster and that it was permitted to slip out again.

81. **Treatment of Pes Cavus.**—It is true, says Sherman, that section of the plantar fascia and a forcible extension of the fore part of the foot on the hinder part and, perhaps, an achillotomy added to correct the relation of the foot to the leg has overcome the deformity; but the position gained has not been maintained because no force is arranged for in the foot and leg to maintain the corrected position, and an extraneous retentive force is either painful or inefficient.

Sherman cuts the tendons of the long toe extensor muscles from their insertion into the toes and transplants them into the metatarsal bones just behind their heads. Because of the difficulty of holding a foot in a certain position while five tendon sutures were done, Sherman, after such subcutaneous sections of fascia and tendons, and such a manual or instrumental remodeling as was necessary to correct a malposition or deformity, put the foot into a plaster-of-paris splint in the corrected position. Then, immediately after the setting of the splint, he cuts away as much as is necessary from the dorsum, exposes the field of operation, and works on the tendons without the danger of any slipping of the foot which might tear out some of the earlier sutures while the later ones are being placed. Because of the practical difficulty in putting the tendon under the periosteum of the metatarsal bone, and suturing it there while working wholly on the dorsum and in a somewhat limited space, he has carried his sutures directly through the foot and the plantar part of the splint fastening them firmly on the outside of the latter. In this way it is possible to hold the tendon closely against the denunded bone under the periosteum, maintaining the position as long as an absorbable suture will last, and that may be about forty days, if chromicized catgut is used. The operation is described in detail.

Annals of Gynecology and Pediatry, Boston.

March.

88 Secondary Abdominal Operations. II. Remote. E. W. Cushing, Boston.

Ophthalmic Record, Chicago.

March.

89 Concerning the Relationship of Nasal Disorders to Vitreous Opacities. J. A. Patterson, Colorado Springs, Colo.
90 Gunshot Wound of Orbit: Post-Traumatic Delirium: Removal of Bullet with Conservation of Globe. W. C. Posey, Philadelphia.
91 Breechpin in Orbit Three Years. S. L. Ledbetter, Birmingham.
92 Recent Changes in Technic of Some Operations of Eye and Adnexa. J. J. Thompson, New York City.
93 Fracture of Floor of Orbit. G. F. Keiper, La Fayette, Ind.
94 Breechpin in Ophthalmology and Surgery. H. Gifford, Omaha.
95 Combined Anterior Chamber Irrigator and Lachrymal Syringe. E. C. Ellett, Memphis, Tenn.

Wisconsin Medical Journal, Milwaukee.

March.

96 Double Perforation of the Urinary Bladder. E. Evans, La Crosse.
97 The Use of Opium in Mental Diseases. A. W. Rogers, Waukwatosa, Wis.
98 Chores Gravidarum. G. Seller, Monroe, Wis.
99 Carcinoma of the Breast. G. F. Shimonek, Milwaukee.
100 Urea: Its Estimation and Importance. C. J. Combs, Oshkosh.
101 The Shades of Modern Surgery. J. Hund, Wausau, Wis.

Journal of the Association of Military Surgeons, Carlisle, Pa.

April.

102 Proposed Medical Reserve Corps for the Army vs. Major Azel Ames' Opinions. W. C. Borden, U. S. A.
103 Is the Common House Fly a Factor in the Spread of Tuberculosis? J. O. Cobb, Los Angeles.

104 Practical Hearing Tests. W. S. Bryant, New York.
105 Radiography in Armies in the Field. H. Mareschal.
106 Relation of the Medical Department to the Health of Armies. W. Hill-Climo, London.

Southern Medicine and Surgery, Chattanooga, Tenn.

March.

107 Etiology of Prostatic Enlargement. G. F. Lydston, Chicago.
108 Mechanism of Immunity Against Tuberculosis. J. R. Briggs, Dallas, Texas.
109 Causes and Symptoms of Nasal Obstruction. J. P. Davidson, Richmond, Va.

Virginia Medical Semi-Monthly, Richmond.

March 10.

110 Vaccination. L. Eliot, Washington, D. C.
111 Uterine Reflexes. J. N. Upshur, Richmond.
112 Vicarious Menstruation or Hemorrhage. M. D. Delaney, Alexandria, Va.
113 Tonsillitis—A Contagious Disease. W. C. Gwynn, Washington, D. C.
114 Methods Employed in Modern Refraction Work. H. H. McGuire, Winchester, Va.
115 Treatment of Prostatic Hypertrophy. L. C. Bosher, Richmond.
116 Gastroenterostomy. W. H. Wathen, Louisville.

Therapeutic Gazette, Detroit, Mich.

March 15.

117 Case of Hour-Glass Stomach the Result of an Ulcer on the Lesser Curvature which Produced a Septum of the Anterior Wall of the Stomach; Anterior Gastrogastrostomy; Recovery; Cure. W. W. Keen, Philadelphia.
118 Limitations and Possibilities of Electricity in Treatment of Diseases of Women. B. C. Hirst.
119 Treatment of Anterior Gonorrhea. S. G. Brown, Montreal, Canada.
120 Rational Treatment of Typhoid Fever. W. R. Lastrapes, Opelousas, La.

Physician and Surgeon, Detroit and Ann Arbor.

February.

121 Present Relation of Otology to the Practice of General Medicine. R. B. Canfield, Ann Arbor.
122 Technic of Operation for Appendicitis. H. C. Wyman, Detroit.
123 Pernicious Anemia. E. H. Pomeroy, Highland Park, Ill.

Western Medical Review, Lincoln, Neb.

March.

124 Pathology and Treatment of Criminal Abortion. W. O. Henry, Omaha.
125 Criminal Abortion—the Nebraska Law. W. A. De Bord, Omaha.
126 Ethics of Criminal Abortion. W. B. Ely, University Place, Neb.
127 Social Causes of Criminal Abortion. I. C. Philbrick, Lincoln.
128 Measures for Prevention of Criminal Abortion. A. B. Somers, Omaha.
129 Hyperchlorhydria Gastrica. A. O. Peterson, Omaha.
130 Malpositions of the Uterus. E. Brown, Omaha.
131 Necessity of Exploratory Abdominal Section in Some Cases. B. B. Davis, Omaha.

Medical Fortnightly, St. Louis.

March 25.

132 Case of Brain Tumor; Operation; Recovery. C. Pope and A. M. Cartledge, Louisville.
133 Salisbury Plan in Treating Consumption. J. H. Adams, Paoli, Pa.
134 Literature on Cancer. (Continued.) C. E. Black, Jacksonville, Ill.

Columbus Medical Journal.

March.

135 Treatment of Acute Non-Suppurative Otitis Media. E. Pynchon, Chicago.
136 Prevention of Tuberculosis. J. W. Clemmer, Columbus.
137 Tuberculosis—Causation. C. L. Spohr, Columbus.
138 Membranous Croup and Its Therapeutics. G. H. Mayhugh, Westerville, Ohio.
139 Meeting Emergencies. W. C. Gates, Marysville, Ohio.
140 Management of Abortion. J. H. Ray, Coalton.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

March 25.

1 *Affections of Some Joints as Met with in General Practice. E. Owen.
2 Short Note on the Nose and Naso-pharynx. S. Paget.
3 *Opening of Peritonsillar Abscesses. S. Thomson.
4 Soft Fibroma of Larynx and Neck. F. T. Paul.
5 Commonly Overlooked Factors in Vocal Mechanism. R. F. E. Austin.
6 Some Observations on the Pathogenesis and Prevention of Loss of Voice in Singers. J. Horne.
7 *Preliminary Note on Renal Activity During Anesthesia. W. H. Thompson.
8 Transillumination of the Antrum of Highmore. A. B. Kelly.

1. **Affections of Joints.**—Owen strongly urges that more attention be paid by general practitioners to affections of joints, no matter how trivial they may be. A thorough examination should always be made, and though there may be nothing wrong with the joint so far as sight or touch can make out, it is the duty of the physician to put the limb at rest the moment advice is sought. Owen uses side splints made of flannel or leather, preferably of the latter, and describes in detail their use, manufacture and application, for different joints.

3. **Opening of Peritonsillar Abscesses.**—Thomson has adopted the following procedure: To reach the abscess, the soft palate itself must be traversed and the sight of election is a point which can readily be located by drawing an imaginary horizontal line across the base of the uvula and a vertical line along the anterior faucial pillar. The point of intersection is found to overlie the supratonsillar fossi. Just external to this is the best point for opening the abscess. Another guide is that this point will be found on an imaginary line extending from the base of the uvula to the upper wisdom tooth on the same side. The field of operation is cleansed and sprayed with a 5 per cent. cocain solution. The abscess is opened with a pair of Lister's sinus forceps, or a modification of this instrument as devised by Thomson. It is better to use the forceps than the knife. There is less risk of wounding a large vessel, and the patient is more likely to permit the proceeding. The duration of the illness is also curtailed considerably.

7. **Renal Activity During Anesthesia.**—Recent observations carried out by Thompson have disclosed an unexpected effect on the secretion of urine produced by ether and chloroform when inhaled for the purpose of producing anesthesia. In one series of experiments the urine was collected by means of canulas placed in the ureters, the animals being narcotized with morphin supplemented, when necessary, by a short inhalation of a mixture of ether and chloroform. In the second series the urine was drawn off from the bladder by a catheter, no previous narcotics being required. Two opposite effects were noted in the case of each anesthetic. During the administration some of the animals showed a pronounced increase in the secretion of urine, others a marked depression. Both types were exemplified in each class of experiments, but the increased effect was more frequent and pronounced in the ureter experiments, the decrease in the catheter experiments. From these experiments it appears that the early effect of both ether and chloroform, lasting up to the period of complete insensibility, is ordinarily an increase of the secretion of urine. This, as a rule, is more pronounced in the case of ether than of chloroform, but during full anesthesia, however prolonged, the secretion of urine is almost completely arrested. The depressing effect during this period is more pronounced with ether than with chloroform. On removal of the anesthetic the kidneys rapidly recover, and there is hyperacidity which lasts for some hours.

Practitioner, London.

April.

9 *Obscure Cases of Cancer of the Stomach. G. N. Pitt.
10 *Treatment of Scalp Ringworm. T. C. Fox.
11 Pathology and Treatment of Puerperal Eclampsia in the Light of Recent Work. A. W. Sikes.
12 *Cytodiagnosis of Pleural and Cerebrospinal Fluids. E. Turton.
13 Attempts to Find a Specific Remedy for Tuberculosis. C. H. Cattle.
14 Review of Recent Investigations on the Physiology and Pathology of Secretory Tissues. H. B. Shaw.
15 Review of Recent Work in Obstetrics. W. E. Fothergill.

9. **Obscure Cases of Stomach Cancer.**—Pitt reviews a series of 17 cases of cancer of the stomach in which the main symptoms were unconnected with that organ. The symptoms of ascites and pleuritic effusion were present in 7 cases; of matted intestine, 3 cases; of intestinal obstruction, 2 cases; of abdominal suppuration, 2 cases; of profound anemia, 2 cases; of iliac tumor, 1 case. In the history of these cases the gastric symptoms frequently were trivial, and although in some it was realized that there was malignant disease, the involvement of the stomach was but rarely diagnosed. In this connection Pitt draws attention to the valuable information

which sometimes may be obtained by a systematic examination of the glands above the clavicle, and especially of those behind the left sternomastoid muscle. The most important gland and often the only one to be involved, lies behind the two lower roots of the muscle. It may be the only external gland infected by cancer of the abdominal cavity. Growth in this gland in more than half the cases indicates primary disease in the stomach, less often in the uterus and exceptionally in the pancreas, liver, kidney or ovary. The left gland is involved four times as frequently as the right. The history of each case is given in detail.

10. **Treatment of Scalp Ringworm.**—Fox reviews the general rules of procedure and the choice of a method and remedies, that advocated by Aldersmith being given the preference. Fox applies an ointment containing one gram of croton oil to the ounce of a base, and this is rubbed in daily, or as often as necessary, to excite the desired degree of inflammation. Such a state is then maintained by judicious reapplication until all the diseased stumps have fallen or have been epilated. All pus formation is rigorously cleansed away, and the pus formation is not allowed. There is no method, says Fox, comparable to croton oil, needling for residual and isolated stumps.

12. **Cytodiagnosis of Pleural and Cerebrospinal Fluids.**—This subject is thoroughly discussed by Turton. In pleural effusions an excess of lymphocytes generally indicates a tubercular origin; a preponderance of polymorphonuclear cells, an inflammatory process due, for instance, to a pneumococcal or streptococcal infection. A passive or mechanical transudation contains, as a rule, a large number of endothelial cells. The cerebrospinal fluid in meningitis of tubercular origin usually shows lymphocytosis, while in inflammatory states caused by the meningococcus, the pneumococcus or streptococcus, and in posterior basic meningitis it is characterized by an excess of polymorphonuclear cells. The presence of lymphocytes is almost constant in general paralysis of the insane, in tabes dorsalis and in syphilitic diseases generally of the central nervous system. The importance of early antisyphilitic treatment in these diseases is generally acknowledged, and cytology would seem to afford the means of making an early diagnosis.

Bulletin de l'Académie de Médecine, Paris.

16 (Year LXIX, No. 10, March 10.) *Discussion sur la paralysie générale de la syphilis. Raymond and Joffroy.
17 (No. 11.) Foreign Bodies in Joints.—Note sur les corps étrangers articulaires et en particulier sur les corps traumatiques étudies au point du vue expérimental et histologique. V. Cornil and P. Coudray.
18 *Discussion sur la paralysie générale de la syphilis. A. Pinard, Hallopeau and Lancereaux.
19 Action toni-musculaire et diurétique de l'acide formique et des formiates. H. Huchard.

16 and 18. **General Paralysis and Syphilis.**—In the discussion that followed Fournier's communication on this subject, summarized in these columns on page 1153, Raymond emphasized the fact that heredity plays a very important rôle. General paralysis requires a soil prepared by a condition of lesser resistance, inherited or acquired, on the part of the cortex. Joffroy denied any connection between general paralysis and syphilis, affirming that they are two distinct affections both in their origin and in their nature. Syphilis is merely a good manure to render the soil fertile; it does not contain the seed. The geographical distribution of syphilis and general paralysis differs. In certain countries in which syphilis is prevalent and severe, such as Japan, Algiers, Bosnia, Tunis, Abyssinia, Indo-China, Corea and the Malabar coast, general paralysis is exceptional, at least among the natives, and is, in some entirely unknown. When tertiary lesions are observed in a general paralytic, mercurial treatment will cure these lesions although it does not affect the paralysis. On the other hand, syphilitic visceral lesions are exceptional in general paralytics. He regards mercurial treatment as no protection against general paralysis, and as dangerous after it is established. In response, Raymond cited Marchand's recent work which obtained one of the Académie prizes last year. He presented evidence to show that the brains of general paralytics frequently show unmistakable syphilitic lesions. They have to be sought with care in series of sections, examining especially the depths of the furrows separating the convolutions. He found evidences of inherited syphilis in 67 per cent. of all cases of juvenile general paralysis.

Pinard urged that physicians should devote more thought to preservation of the species from syphilis. The profession has accomplished wonders in preserving the wife from contamination, but it has paid too little attention to preserving the offspring. The birth of a healthy child is not a decisive proof that the father has been cured of syphilis. Every syphilitic who wants to have healthy children should take a "heredity course" of mercurial treatment, supplementary to his own course. After the usual careful course of antisyphilitic treatment, when the patient is free from all trace of syphilis and wishes to procreate healthy children, Pinard's practice for twenty-six years has been to institute then a six-months' course of mercuric iodid and potassium iodid before he gives the patient permission to procreate. Pinard orders the same course of treatment for the wife during the entire period of gestation. He orders also a repetition of the same treatment before the procreation of each child. He has never had a failure and he appeals to all physicians to protect the race from the ravages of syphilis. The present prophylaxis protects the man himself, it protects the wife, but it is insufficient to protect the offspring in all cases. Hallopeau regards general paralysis in a syphilitic as an affection induced secondarily in a predisposed subject by specific neoplasms in the meninges or in the brain substance, developing independently later. He suggests the name deuteropathy for such an affection, as this implies its filiation with the mother disease and the independence of the secondary inflammation which has its own evolution and may in time dominate the situation. General paralysis he accepts as a deuteropathy usually induced by syphilis, but liable also to develop under the influence of other causes. Energetic treatment of syphilis may, therefore, ward off the specific lesions, and thus the general paralysis. If the premonitory symptoms of the condition can be detected, with specific treatment on their appearance, the development of the neoplasms may be aborted and the deuteropathy averted. Lancereaux affirms that the lesions of diffuse periencephalitis—which is the essence of general paralysis—differ in every respect from the lesions of syphilis. They differ in character and in evolution and are two affections between which there is no connection. Raymond in reply cited data to prove that better knowledge has revealed a closer connection between many things than was at first imagined. He added that when the data furnished by histology seem to contradict those of the clinic, we must always appeal from pathologic anatomy with imperfect technic to better informed pathologic anatomy.

Presse Médicale, Paris.

Last indexed page 1231.

20 (1905, No. 6.) *Pathogénie de certains cas d'edème aigu du poumon (acute edema of lung). O. Josué.
21 Indications de l'hystérectomie abdominale pour annexites. J. Delage.
22 *X*-rays in Ophthalmology.—Action des Rayons X sur l'oeil et radiothérapie oculaire. G. de Lapersonne.
23 (No. 7.) Medical Mutual Life and Accident Insurance.—L'assurance mutuelle-médicale. Vimont.
24 *Procédé de néphrectomie pour cancer. R. Grégoire.
25 L'action du muscle court supinateur dans la paralysie du nerf radial. G. Guillain and Courtellement.
26 (No. 9.) *Polyurie et éliminations urinaires dans le méningite cérébro-spinale. Loeper and X. Gouraud.
27 *Les maladies infectieuses et l'hérédité. J. De Nittis.
28 (No. 10.) L'enseignement ostétrical à la clinique Tarnier (instruction in obstetrics). Budin.
29 *Les neurofibrilles d'après la méthode et les travaux de S. Ramon y Cajal. L. Azoulay.
30 (No. 11.) *Les nouveaux appareils à chloroformisation. F. Jayle and G. Berruyer.
31 *Paraplégies diphthériques frustes. C. Aubertin and L. Babonneix.

20. **Acute Edema of the Lung.**—Josué is convinced that there is some close connection between arterial hypertension, atheroma and acute edema of the lung in many cases of the latter. The symptom-complex, in his opinion, suggests some functional disturbance in the suprarenals. Repeated injections of small amounts of the active principle of the suprarenals produce typical lesions of arterial atheroma in animals. On the other hand, he has found indications of excessive functioning of the suprarenals in 3 atheromatous cadavers. If considerable

amounts of the active principle of the suprarenals are injected into rabbits the animals invariably succumb with symptoms of acute edema of the lungs. His experimental research failed to show that kidney lesions had any direct predisposing influence on the occurrence of acute edema of the lungs, phenomena were noted, however, which suggested the possibility that a primary kidney lesion, with its resulting autointoxication, might be the primal cause of the excessive functioning of the suprarenals.

24. **Nephrectomy for Cancer.**—Grégoire describes a technic by which the kidney, the tumor and the surrounding tissues, the lymphatics and the cellular adipose tissue and ganglia can all be removed in one piece as in operating on the mamma. He followed this technic in several cases and found it exceptionally simple and easy, while the results promise to be permanent. The patient lies half way between the dorsal and the lateral decubitus, with a block of wood under the lumbar region. The incision is on an extension of the axillary line, and reaches from the costal arch to the iliac crest. It is then carried forward, skirting the costal arch for 4 or 5 cm., and then downward along Poupart's ligament, thus outlining a flap, down to but not through the peritoneum. This allows ample access to the kidney and its environment. The article is illustrated.

26. **Urinary Elimination in Cerebrospinal Meningitis.**—Loeper asserts that polyuria dominates the urinary syndrome in ordinary cerebrospinal meningitis. He has had patients with a temperature of 40 C. and over, who passed from 3 to 4 quarts of urine a day. The urine is clear, only slightly, if at all, albuminous, but azoturia is the rule. From 34 to 47 and 57 gm. of urea were found in the urine of some of the patients, the largest amount being 84 gm. in one patient with 2 liters of urine. The elimination of chlorids is uneven, from 5 to 17 gm. were noted and 24 gm. in the morning with 7 in the evening in one patient. Phosphates were found in large proportions in the 3 cases examined from this point of view. Drugs ingested appeared in the urine exceptionally promptly and abundantly, showing exaggerated permeability of the kidneys in this disease. The proportions of sugar and urea in the blood were also remarkably high. The phenomena observed indicate overproduction and overelimination from bulbar irritation. If the case is a very grave one, or if it is due to the pneumococcus, this polyuria does not occur. When the toxic infection is intense, this overproduction and overelimination are not observed. The character of the urine is so special that it serves to differentiate ordinary cerebrospinal meningitis from typhoid fever, grippe and tuberculous meningitis, and the differentiation is confirmed by examination of the cerebrospinal fluid.

27. **Infectious Diseases and Heredity.**—De Nittis marshals arguments from botany and natural history to show that certain diseases are capable of modifying the race until the modification becomes a normal condition in the race, as it were, and the lesions characteristic of the disease reappear in the later generations. He cites the potato as an instance, stating that the tubers are not normal growths but are parasitic tumors reproduced by heredity in successive generations. The conditions of nutrition and evolution are modified by the parasite, and these modifications may be transmitted to the descendants without the intervention of new infection.

29. **Ramon y Cajal's Stains for Nerve Tissue.**—Azoulay gives in minute detail Cajal's technic for staining nerve tissue. Fresh tissue is wet with a solution of silver nitrate and is then reduced with some organic reducing fluid, such as pyrogallic acid. A 3, 6 or 8 per cent. solution of silver nitrate is best for the neurofibrils of the invertebrates and gives the best results after two to five days. The vertebrates give better results when a .5 to 1.5 per cent. solution is used, with final results by the fourth to sixth day or even later. Certain animal species have still proved rebellious to the stain, the earthworm, among others.

30. **Apparatus for Chloroformization.**—Jayle gives illustrated descriptions of the four principal apparatus devised to supply chloroform mixed with air, with or without oxygen.

31. **Abortive Diphtheritic Paraplegia.**—The abolition of the kneejerk may be the sole symptom of a postdiphtheritic paraplegia, or the paralysis may exist in an infinite number of forms, ranging from mere paralysis of the velum to the diphtheritic poliomyelitis in acute ascending spinal paralysis.

Revue de Chirurgie, Paris.

Last indexed page 1071.

32 (XXV, No. 3.) La castration contre l'inversion sexuelle. C. Fere.

33 *Entrance of Air into Veins During Operation.—De l'entrée de l'air dans les veines. X. Delore and R. Duteil.

33. **Entrance of Air into Veins During Operations.**—Delore and Duteil report a case of sudden death due to entrance of air into a vein during removal of a very large malignant tumor from the neck of a man of 36. They epitomize the published history of cases in which air has entered a vein during operations, and remark that the rarity of the occurrence is probably owing to the preliminary compression of the blood vessels for provisional hemostasis. The veins in the field of operation should always be compressed to prevent such a contingency as the entrance of air. When the catastrophe has occurred, relief might be obtained by drawing blood from the arm. In any event, when it has been definitely established that air has penetrated into a vein the auricle should be punctured without delay. Experiences with animals and on the cadaver have shown that such a puncture is perfectly harmless, and, if done in time, can not fail to prove as invariably successful as in the experimental tests. The auricle suffers most from the distension, owing to the thinness of its walls. An aspirating puncture of the right auricle would not only relieve the heart but would also aspirate the air from the vein trunks. The needle connected with the suction apparatus is introduced through the third left interspace, about 1.5 cm. from the margin of the sternum, and the point is directed toward the middle of the sternum as soon as it has pierced the wall. The needle will probably traverse a little lung tissue, but the hole is so minute that no harm results. In the case described in detail puncture was done but not until late. The result might have been different if it had been done more promptly.

Semaine Médicale, Paris.

34 (XXV, No. 10, March 8.) *Cure of Myxedema by Thyroid Grafting.—La guérison du myxédème par la greffe thyroidienne. H. Cristiani (Geneva).

35 *De l'hémostase provisoire et préventive dans les désarticulations scapulo-humérale et coxo-fémorale et dans les amputations intéressant le quart supérieur des membres. E. Estor (Montpellier).

36 *La stérilisation facultative de la femme. Editorial.

37 (No. 11.) Pathogénie et variétés cliniques du rétrécissement mitral (mitral stenosis). E. Barié.

38 Drinking Water and Milk Regarded as Articles of Food and Responsibility for Their Adulteration.—De l'assimilation de l'eau potable et du lait aux denrées alimentaires, etc. Editorial.

34. **Thyroid Grafting in Treatment of Myxedema.**—Cristiani has been continuing the research on this line, described in THE JOURNAL, page 846 of the last volume. He has followed to date his patients first operated on, and reports a number of new cases. One was an English girl of 21, of a healthy family and healthy herself until the age of 15, when she began to exhibit symptoms and by the end of two years presented the complete syndrome of myxedema with difficulty in breathing. Partial thyroidectomy in 1902, to relieve the dyspnea, was followed a year later by removal of all the rest of the gland. It was found completely degenerated, and the symptoms of myxedema increased in intensity. They were somewhat relieved by fluid thyroid extract, and it was found that 30 drops, in three doses during the day, kept the patient permanently in a bearable condition, although the slightest fatigue brought on more or less prostration. In July, 1904, 16 pieces of the histologically sound parts of a hypertrophied thyroid gland removed from another young woman were grafted into the patient. Each scrap weighed about 10 cg., and they were implanted in little tunnels burrowing in different directions from four incisions in the skin about 2 cm. long, one between the breasts, two on the posterior axillary line and one in the scar on the neck from the thyroidectomy. One scrap was implanted in the ear to serve as a control. The total thus grafted was

about one-tenth of a normal thyroid gland. The manifestations of the myxedema in the cheeks, neck, mammæ and hips vanished at once. There was absolute metamorphosis of the patient in three days as the signs of myxedema rapidly subsided. In order to spare the young grafts, the thyroid extract was kept up for a time in doses of 5 to 20 drops a day. It was found that the patient was kept in the best condition when she took 20 drops a day continuously. This was two-thirds of the amount previously necessary, and it was assumed, therefore, that two-thirds more of thyroid substance were required for a complete cure. In October, 1904, 28 scraps from another patient were implanted as before through four incisions. The results were as prompt and striking as after the first operation, and the patient grew progressively better. The fluid thyroid extract was soon completely suspended and the young girl has since been in apparently perfect health, even through the stress of an ultra-fashionable wedding. Most of the grafts are evident on palpation, and have become durable and functionally capable neo-thyroid organs, the same as in Cristiani's experiments with animals, and in the other experiences related. The latter include the cure of cretinism in a child of 3 after thyroid grafting.

35. **Preventive Hemostasis in High Amputations of Limbs.**—Estor's method of hemostasis is to be applied wherever the slope of the parts renders it difficult to keep the Esmarch bandage from slipping. He takes up a fold in the skin and nips this fold with a pair of forceps. Three or four other forceps are applied in the same way on the fold of skin, which encircles the limb. The Esmarch bandage is then applied, centrally of the forceps, which are held perpendicularly by assistants. After the bandage is in place the forceps are laid over backward on the skin, over the Esmarch band, and a rubber tube is passed through the handles and fastened, thus forming a second loose band above the root of the limb. The tourniquet can then be drawn as tight as desired, the grasp of the row of forceps on the fold of the skin absolutely preventing it from slipping down. The second band is merely to hold the forceps handles loosely in place. In disarticulation of the hip, the external iliac artery can not be compressed by the tourniquet as it lies below the plane of compression, but this is remedied by introducing a pad under the bandage at this point. The femoral artery did not bleed a drop in amputating the upper third of the thigh in a recent case, under this technic, and it has proved equally effective for the shoulder and hip.

36. **Facultative Sterilizing of Woman.**—This editorial states that the idea of operative sterilizing of woman is ancient, but that it was first carried into practice by J. Kocks of Bonn in 1878. He obliterated both tubes with the actual cautery in a consumptive woman, a iv-para. The operation found no imitators, but nineteen years later Kehrer, of Heidelberg, reported section of both tubes after anterior colpotomy in an invalid, who in seven years had borne seven children. Other communications on the subject were published afterward, nearly all German, discussing the best technic for operative sterilization. The editorial concludes by stigmatizing the whole question of facultative sterilization, temporary or permanent, as one with which the physician should have absolutely nothing to do.

Berliner klinische Wochenschrift.

39 (XLII, No. 8, February 20.) Paralysis from Fright—Recovery Under Psychic-Suggestive Treatment.—Ein Fall von Schrecklähmung. E. v. Leyden.
40 Die klinische Anwendung des Streptokokkenserums (especially as prophylactic). F. Meyer.
41 Ueber dialysiertes Diphtherie-Gift (toxin). P. H. Romer (Marburg).
42 Ein neuer Fall von intrauteriner Skelettierung. A. Hirschberg.
43 *Ein Fall von congenitaler Pulmonal-Stenose, sowie Bemerkungen über die Diagnose des offenen Ductus Botalli. G. Arnheim.
44 Lokale Anaesthesia und Analgetica.—Ozaena. G. Finder.

43. **Congenital Pulmonary Stenosis.**—The diagnosis of patency of the ductus arteriosus is still very uncertain, Arnheim remarks. He describes the findings in a case of congenital pulmonary stenosis and tabulates these of 9 other cases of stenosis with or without a patulous foramen ovale. The behavior and transmission of the sounds in each case are also listed in the tables. Cyanosis was by no means constant in the 10 cases of pulmonary stenosis. The pulse was weaker on the left in one case, and on the right in another; in the others it was even and regular. The murmur was not always systolic. In the case with persistent ductus arteriosus the murmur was presystolic, diastolic, loudest in the third left interspace, and the pulmonary sound was strongly accentuated but was not heard from behind. In 40 cases of pulmonary stenosis on record, all the fetal passages were obliterated in only 2. In 5 the septum was normal but the foramen ovale was patulous.

Centralblatt f. Chirurgie, Leipsic.

Last indexed page 1073.

45 (XXXII, No. 10, March 11.) Ein Fall von Milzexstirpation wegen Aneurysma der Arteria lienalis (splenectomy). V. Winckler.
46 New Pelvis Support.—Eine neue Beckenstutze. A. Hofmann (Freiburg).
47 (No. 11.) *To Facilitate Vaginal Hysterectomy in Case of Thickened Cervix.—Eine Erleichterung der vaginalen Uterusextirpation bei verdickter Cervix. C. Lauenstein.

47. **To Facilitate Vaginal Hysterectomy.**—When the cervix is abnormally thick and large, Lauenstein removes first the lower segment of the uterus. This is done by an oblique incision as for Schröder's supravaginal high amputation of the cervix. The rest of the uterus then shells out with remarkable ease.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 1073.

48 (XXIX, No. 10, March 11.) Acute Edema of Cervix During Pregnancy.—Fall von akutem Odem der Muttermundslippen während der Schwangerschaft infolge Koprostase. L. Seitz.
49 *Avoidance of Bladder Disturbances After Gynecologic Operations.—Die Vermeidung von Blasenstörungen nach gynäkologischen Operationen. A. Gutbrod.
50 "Studien zur Physiologie des Uterus." E. M. Kurdinowski.
51 (No. 11.) Ueber Facialis- und Hypoglossus-Parese nach Spontangeburt (after spontaneous birth). A. Stein.
52 Die Symphyseotomie ist eine chirurgisch inkorrekte Operation. L. Gigli.

49. **To Prevent Bladder Disturbances After Gynecologic Operations.**—Gutbrod ascribes such disturbances to pressure on the bladder from the previously misplaced uterus. He counteracts this by leaving a catheter in the bladder for five days. When removed after this period, the bladder has adapted itself to the new conditions and there is no further trouble. He has never had a failure in fifty cases thus treated. He leaves the catheter in place for eight days after a colporrhaphy; drainage of the bladder in this way during the first week prevents recurrence later.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

53 (XXXI, No. 7, February 16.) *Die Prophylaxe und Abortiv-Behandlung der Gonorrhoe. E. Finger.
54 Sacrifice of Living Child in Behalf of Mother.—Zur Frage der Opferung des lebenden Kindes zum Vorteil der Mutter. O. v. Herff.
55 Erfahrungen auf dem Gebiete der Chirurgie der Gallenwege (of biliary passages). Riese.
56 *To Increase Agglutinability of Bacilli.—Steigerung der Agglutinierbarkeit der Typhus-Bacillen und ihr Wert für die Typhus-Diagnose. Sehrwald.
57 *Die Verwendung der Spiritusverbände (alcohol dressings). Brugger.
58 (No. 8.) *Ueber Indikationen und Methoden der fakultativen Sterilisierung der Frau (induced sterility of woman). O. Sarwey (Tubingen).
59 *Ueber Misch-Narkosen im Vergleich zur reinen Chloroform- oder Aether-Narkosen. B. Müller.
60 Einige Fälle von Perforation des Duodenums und Magens (of stomach). O. Croce.
61 Zur Abortiv-Behandlung der Gonorrhoe nach Blaschko. F. Block.
62 *Light Phenomena After Rubbing Skin with Incandescent Lamp.—Licht-Erscheinungen nach Reibung der menschlichen Haut mit Glühlampen. Sommer.
63 Hemostasis with Jet of Superheated Air.—Ueber Blutstillung an parenchymatosen Organen (Leber, Nieren) mittels Heissluft Dusche. H. Schlee.
64 Infection from Kissing the Hand.—Influenza und Hand küssen. A. Duhrssen.
65 Die Sanatorium-Frage in Italien. M. Segale.

53. **Prophylaxis and Abortive Treatment of Gonorrhea.**—Finger commences a systematic course of treatment in every case of recent infection. The more recent and the slighter the symptoms, the stronger the concentration of the silver salt he uses, while with established lesions he uses one-quarter this strength. In regard to individual prophylaxis, experience has demonstrated that none of the measures recommended to date are either absolutely reliable or harmless.

56. To **Enhance Agglutinability of Typhoid Bacilli.**—Sehrwald announces that stems of typhoid bacilli which do not agglutinate readily can be modified in this respect by being grown on sterile potato or on media containing potato juice. They acquire the property of becoming agglutinated much more rapidly and thus hasten the response to the test.

57. **Alcohol Dressings.**—Brugger indorses the advantages of the permanent alcohol dressing for pain, inflammation and suppuration of all kinds. The dressings must be large and must be kept moist, but not wet, with the alcohol. Vollbrecht applies the alcohol on a bag of sifted sawdust. This fits like a soft cushion over the part and keeps moist for about twenty-four hours. The pain is relieved, the inflammation subsides and the general effect is very favorable. The alcohol dressings are as useful for the hospital and army surgeon as for the general practitioner and in dispensary practice. There are no inconveniences from their use except the trifling and transient puckering of the skin and the danger of fire.

58. **Facultative Sterilization of Women.**—The editor of the *Wochenschrift* commissioned Sarwey, professor of gynecology at Tübingen, to present in concise form the present status of the question of facultative sterilization, how far the physician is justified in performing it, under what circumstances it appears to be necessary and how it can be accomplished. He accepts as indications for it: 1. A pelvis so contracted that cesarean section will probably be required, or one in which a previous childbirth has been very difficult; 2. A general and local affection accompanied by general depression, with the probability of aggravation by a pregnancy. This list includes osteomalacia, psychoses, especially those of a melancholic or maniacal character, chronic heart, lung, intestine or kidney disease, severe anemic and cachectic conditions and disturbances of the general health such as may be induced by various physical anomalies. The third indication he calls the "social." He remarks that this indication is not generally recognized, but that all the objections urged against it are confronted by the fact that when the family keeps increasing continuously year after year in a home where poverty rules, the mother's strength and health become undermined and she is unable to rear and care for her children properly. The excessive number of children in the homes of the poor is, in some cases, he believes, the direct cause of the crime and ruin that overwhelm certain families. The prevention of such tragedies by prophylactic instruction Sarwey regards as a grateful task for the family physician, after he has maturely weighed all the circumstances and realizes his responsibility. A fourth indication for facultative sterilizing of the wife is afforded by a grave family history of tuberculosis or insanity, when the physician's advice has not been heeded that such persons should not marry. Sarwey reviews in detail the operative and other means of preventing conception, temporary or permanent, chemical, mechanical and surgical. He thinks that the ethics and technic of facultative sterilization of woman should be taught in the medical schools and incorporated in the textbooks. He remarks that the present abuse of temporary measures to prevent conception might be controlled by more stringent legislation against them, allowing their sale only on a doctor's prescription.

59. **Mixed Anesthetics.**—Müller reports the results of experiments on animals, mostly dogs, anesthetized with various anesthetics in turn, chloroform, ether, etc., with subsequent investigation of the condition of the parenchymatous and other organs. The anesthesia proceeded more smoothly sometimes when two or more different drugs had been used, but the toxic influences on the organs were much more pronounced than with one alone. The toxic action of the two drugs seemed to be superposed with a cumulative action, while the by-effects of the drugs had an unmistakably depressing influence besides.

62. **Light Phenomena After Rubbing Skin with an Incandescent Lamp.**—When a new incandescent lamp, with the current turned off, is rubbed on the skin, or on wool or fur, light is generated. The light is sufficient to take the outline photograph of solid objects. The amount of light generated varies with different parts of the body and with different persons. Sommer thinks that the phenomenon may repay further study of the physiologic conditions as influencing these differences.

Münchener medicinische Wochenschrift.

66 (LII, No. 9, February 28.) *Ueber chemische Befunde bei Nephritis (chemical findings). T. Rumpf.
67 *Beitrag zur Behandlung der myeloiden Leukämie mit Röntgen-Strahlen (*X*-Rays). K. Schleip and W. Hildebrandt.
68 *Extraction of Foreign Body in Esophagus.—Fremdkörperextraktion im Oesophagoskop. H. Starck.
69 *Id.—Die Diagnose und Extraktion von Fremdkörpern der Speiseröhre mit dem Oesophagoskop. A. Reizenstein.
70 *Inflation of Esophagus to Promote Passage of Foreign Body.—Ueber Oesophagusaufblähung zur Beseitigung eines Fremdkörpers. O. Franck.
71 Value of Cystoscopy in Injuries of Bladder and Ureters.—Was leistet die Cystoskopie bei Verletzungen der Blase und der Ureteren? L. Thumim.
72 *Zur Technik der Laparotomie. B. Müller (Hamburg).
73 Zur endermatischen Anwendung des Guajakols. Hecht.
74 Ueber innerliche Darreichung von Lysol bei Anämie und seine mächtig den Appetit anregende Wirkung. F. Burger.
75 Tuberkulose und Gravidität. M. v. Holst.
76 Zur Frage der therapeutischen Dosierung der Röntgen-Strahlen (dosage of *X*-rays). F. Dessauer.

66. Chemical Findings in Nephritis.—Rumpf here relates the results of chemical study of cases of nephritis, the research extending over the years since 1894. The blood, kidneys, heart, liver and spleen were exhaustively analyzed postmortem. Among the facts thus ascertained is the unmistakable retention of organic substances in the blood and tissues in the early stages of chronic nephritis. The proportion of water was below normal while the proportion of solids was unusually high. In the later stages this finding is less distinct. The proportion of sodium chlorid in the kidney of adults was much above that in the blood and other organs in many cases. This finding was particularly marked in certain cases of nephritis, but not invariably in all. In many cases of nephritis the proportion of sodium chlorid in the blood and tissues was quite high, but not the maximum encountered. In certain cases of chronic nephritis, the percentage of sodium chlorid in the blood and other organs was rather below than above normal although associated with edema, albuminuric retinitis and uremic phenomena. Pericardial, pleural and peritoneal effusions in case of nephritis, not complicated with dropsy of cardiac origin, were sometimes unusually rich in sodium chlorid and sometimes not, so that the origin of the effusion can not be ascribed to retention of sodium chlorid. The proportion of sodium chlorid in 9 cases of peritoneal effusion without nephritis (6 cases of cirrhosis of the liver, one of tuberculosis, and one of a complicated heart defect), was considerably higher than was encountered in any case of nephritis The retention of sodium chlorid is not so important for the dropsy of kidney disease as has been lately proclaimed, although there is no doubt that it has a certain importance from this point of view. There is retention of various other salts as well as of the chlorid; potassium, sodium, calcium and magnesium salts are also retained. The proportion of the latter in the blood was found remarkably high both in acute nephritis and in the cases of nephritis complicated with arteriosclerosis The frequent increase in the mostly organically bound potassium confirms the assumption of retention of organic substances in the blood and tissues.

67. Roentgen Treatment of Myeloid Leukemia.—The spleen in the case reported by Schleip extended a hand's breadth to the right of the linea alba and reached down to the region of the symphysis. It was firm to the touch but not painful. The blood findings were those of typical myeloid leukemia, with symptoms first noted two and a half years before. The changes in metabolism and in the composition of the blood are tabulated. They show great improvement under the Roentgen treatment. The exposures aggregated 800 minutes in the course of four months, about 650 minutes being devoted to the spleen and the rest to the bone marrow. At the end of this time the red corpuscles numbered 3,600,000, the leucocytes 28,600, and the hemoglobin 80 per cent.; the patient felt and looked extremely improved. The course was supplemented by arsenic. The treatment was suspended at the end of four months on account of symptoms on the part of the intestines and peritoneum, diarrhea and ascites, first commencing with the arsenic.

68-69. **Esophagoscopy.**—Starck related a few months ago his experience with esophagoscopy in 65 cases in which it afforded extremely valuable diagnostic information. He here describes 4 cases in which it allowed the extraction of a foreign body, and mentions that 73 instances of the kind have been published. He urges it as a routine measure, in every case of an impacted foreign body, in the place of any other maneuver. If the extraction through the esophagoscope is not feasible, then gastrotomy should follow without delay.

Reizenstein echoes his recommendation of the esophagoscope, and urges that it should be used at once, before damage has been done to the wall of the organ by the foreign body. He relates 6 instructive instances of its use.

70. **Inflation of Esophagus to Promote Passage of Foreign Body.**—Franck tells of a case in which a chunk of tough meat had become impacted in the esophagus and caused much distress. It was on shipboard, and no means of relief were at hand. He finally applied the principle used in inflating the stomach for diagnostic purposes. He mixed the two parts of an effervescent powder with a little water and had the patient drink each separately. He held his mouth and nose so that the fluid could not escape. Palpation of the stomach showed that the occlusion of the esophagus had been complete as none of the gas generated found its way into the stomach. After a brief, violent effort, the patient felt the chunk pass on downward into the stomach.

72. **Improved Technic of Laparotomy.**—Müller recommends what he calls his "laparotomy cuff" to prevent infection of the lips of the wound. It consists of rubber tissue made with parallel narrow strips of steel, about 3 cm. apart. Two pieces of the rubber tissue are cut, each a little longer than the length of the wound. They are bent over the edge of each lip of the wound, the steel strips being bent like a stirrup, the cuff thus fitting close over the edge of the wound and for some distance back over the skin above and under the peritoneum below. If desired, a string is passed through a hole in the longer end of each steel strip above the skin, the ends of the strings being brought together and a weight fastened to them, serving as an automatic retractor for each lip of the wound. The weights are not necessary, as the elasticity of the bent steel strips holds the cuff in place. It protects the wound from all contact with instruments, hands, forearms, or infecting material, and against every possible infection from the exterior, from the air, from droplets, etc. If the cuff becomes soiled it is easy to replace it with a clean one. The sheet of rubber is made by the yard with the flexible metal strips running through it at 3 cm. intervals. The long end of each metal strip measures about 8 cm., the shorter end about 5, and the central part, bent at right angles, measures from 3 to 5 cm. The short end of the strip terminates in a knob or plate, to prevent injury of the peritoneum. The short end is bent inward a little to ensure an elastic hold on the abdominal wall.

Therapeutische Monatshefte, Liebreich's, Berlin.

Last indexed page 1233.

77 (XVIII, No. 12.) Serum Treatment of Hay Fever.—Zur Serumbehandlung des Heufiebers. A. Lübbert (Hamburg).
78 Night Sweats in Phthisis.—Ueber Nachtschweisse bei Lungen-Tuberkulose und deren Bekämpfung. Ulrici.
79 Urotropin als Prophylacticum gegen Scharlach-Nephritis (scarlatinal). K. Patschkowski.
80 *Zur Technik der Bandwurmkuren (tape-worm expulsion). I. Boas.
81 Zur Pathologie und Therapie der Pädatrophie (atrophy of digestive glands). A. Hecht.
82 Behandlung eingeklemmter Brüche (incarcerated hernia). Hüls.
83 *Detection of "Occult" Blood with H_2O_2.—Blutnachweis durch Wasserstoffsuperoxyd. F. Schilling (Leipsic).

80. **Treatment of Tape Worm.**—Boas slights the preliminary preparation of the patient and uses a much smaller dose of the vermifuge than some consider necessary. He gives from 5 to 8 gm. of extract of male fern in the morning, fasting. Six hours later—not before—he gives the purgative, preferring a "bitter water" for the purpose. Oil is liable to promote the absorption of the fern extract, and calomel is unreliable in these cases. He relates several instances to show the success of this simple technic after the failure of ten or more previous "tape worm treatments." When the patient vomits easily, he pours the extract into the stomach in the form of a thin gum arabic emulsion. In one instance he injected morphin at the same time.

83. **Detection of Blood with H_2O_2.**—Schilling calls attention to the value of the information afforded by addition of a few drops of H_2O_2 to any substance in which the presence of blood is suspected. Tiny bubbles form in the presence of blood, and rise up in foam. These bubbles are always clear as water; the substance being tested becomes decolorized in the bubbles. He uses a 20 per cent. solution of H_2O_2. Tests have shown that the bubbles still form at a dilution of the blood long past the point of visibility, even at 1 to 1,600. Clinical tests with stomach content, feces, etc., demonstrated that this simple test for "occult hemorrhage" deserves to rank with the guaiac or aloin-turpentine test.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

DISEASES OF THE SKIN, their Description, Pathology, Diagnosis and Treatment, with Special Reference to the Skin Eruptions of Children and an Analysis of 15,000 Cases of Skin Disease. By H. Radcliffe-Crocker, M.D. (Lond.), F.R.C.P., Physician for Diseases of the Skin in University College Hospital. Third Edition, Revised and Enlarged. Special Illustrated Edition, with 76 Plates and 112 Illustrations. Vols. I and II. Cloth. Pp. 1466. Price, $8.00 net. Philadelphia: P. Blakiston's Son & Co. 1905.

RECURRENT EFFUSION INTO THE KNEE JOINT AFTER INJURY, with Especial Reference to Internal Derangement Commonly Called Slipped Cartilage. An Analysis of 750 Cases. A Clinical Lecture Delivered at St. George's Hospital. By Sir William Bennett, K.C.V.O., F.R.C.S., Senior Surgeon to St. George's Hospital. With 11 Illustrations. Cloth. Pp. 28. Reprinted from the *Lancet*. New York and Bombay: Longmans, Green & Co. 1905.

DISEASES OF THE HEART. A Clinical Text-Book for the Use of Students and Practitioners of Medicine. By Edmund H. Colbeck, B.A., M.D., B.C. (Cantab); F.R.C.P. (London); D.P.H. (Cantab), Physician to Out-patients at the City of London Hospital for Diseases of the Chest. With 43 Illustrations. Second Edition, Revised and Enlarged. Cloth. Pp. 350. Price, $2.50. Chicago: W. T. Keener & Co. 1905.

MALFORMATIONS OF THE GENITAL ORGANS OF WOMAN. By Ch. Debierre, Professor of Anatomy in the Medical Faculty at Lille. With 85 Illustrations. Translated by J. Henry C. Simes, M.D., Emeritus Professor of Genito-Urinary and Venereal Diseases in the Philadelphia Polyclinic. Cloth. Pp. 182. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1905.

A GERMAN-ENGLISH DICTIONARY of Terms Used in Medicine and the Allied Sciences. By the late Hugo Lang, B.A. Edited and Completed by Bertram Abrahams, M.B., B.Sc., F.R.C.P., Assistant Physician, Westminster Hospital. Cloth. Pp. 598. Price, $4.00 net. Philadelphia: P. Blakiston's Son & Co. 1905.

THE THYROID AND PARATHYROID GLANDS. By Hubert Richardson, M.D., Late Pathologist to Mount Hope Retreat. With 77 Half-tone Illustrations Made from Special Drawings by F. P. Wightman. Cloth. Pp. 261. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co. 1905.

ISTHMIAN CANAL COMMISSION. Sanitary Conditions on the Isthmus of Panama. Report of Dr. C. A. L. Reed, with Reply of the Isthmian Canal Commission and Letters of the President and Secretary of War in Reference Thereto. Paper. Pp. 65. Washington, D. C. 1905.

NINTH ANNUAL REPORT OF THE BOARD OF MANAGERS OF THE SPRINGFIELD STATE HOSPITAL of the State of Maryland, Sykesville, Md., to His Excellency, the Governor of Maryland, Oct. 1, 1904. Paper. Pp. 61. Baltimore: The Sun Book and Job Printing Office. 1905.

FIFTY-SIXTH ANNUAL REPORT of the Board of Trustees and Superintendent of the Central Indiana Hospital for the Insane for the Fiscal Year Ending Oct. 31, 1904. Paper. Pp. 86. Indianapolis: W. B. Burford. 1905.

TWENTY-NINTH ANNUAL REPORT OF THE LADIES' UNION CHARITABLE SOCIETY, Conducting the Lawrence General Hospital and Children's Home, for the Year Ending Sept. 30, 1904. Paper. Pp. 71. Lawrence, Mass. 1904.

TWENTY-NINTH ANNUAL REPORT OF THE MANAGERS AND OFFICERS OF THE NEW JERSEY STATE HOSPITAL at Morris Plains, for the Year Ending Oct. 31, 1904. Paper. Pp. 134. Paterson: News Printing Co. 1905.

TRANSACTIONS OF THE AMERICAN ROENTGEN RAY SOCIETY. Cloth. Fifth Annual Meeting, St. Louis, Mo., Sept. 9, 10, 12 and 13, 1904. Cloth. Pp. 183. Philadelphia: A. H. Sickler Co. 1905.

EIGHTH BIENNIAL REPORT OF THE EASTERN INDIANA HOSPITAL FOR THE INSANE, for the Period Ending Oct. 31, 1904. Paper. Pp. 107. Indianapolis: Wm. B. Burford. 1905.

ANNUAL REPORT OF THE ASYLUM FOR CHRONIC INSANE, Milwaukee County, for the Year Ending Sept. 30, 1904. Paper. Pp. 54. Milwaukee: E. Keogh Press. 1905.

REPORT OF THE TUBERCULOSIS COMMISSION OF THE STATE OF VERMONT in the General Assembly, 1904. Paper. Pp. 28. Rutland, Vt.: Tuttle Co. 1904.

MEDICAL PHILOLOGY. Gathered by L. M. Griffiths, M.R.C.S. Eng. Part 1. A—El. Cloth. Pp. 100. J. W. Arrowsmith, Bristol. 1905.